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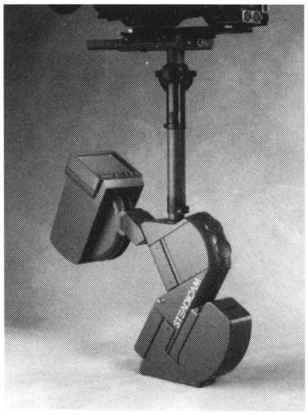

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The International Journal of Film and Electronic Production Techniques

August 1994 Vol. 75 No. 8

American Cinematographer

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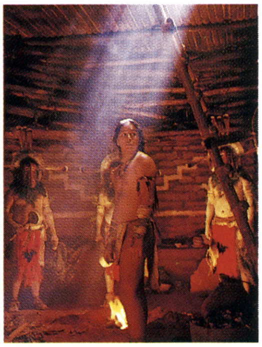

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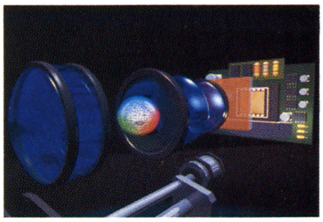

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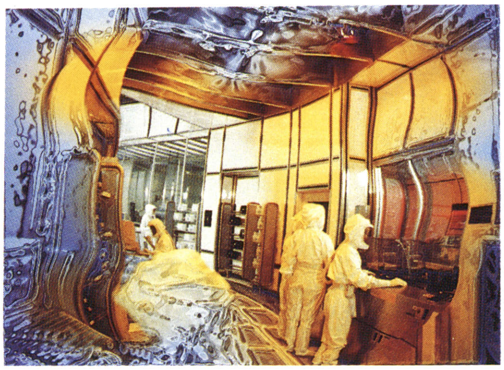

On Our Cover: In a Sardonicus-like image from an actual Imax frame of *The Journey Inside*, the "alien-vision" effect warps a POV in the "Fab," or chip manufacturing area. The frame is shown actual size at left.

Contributing Authors:
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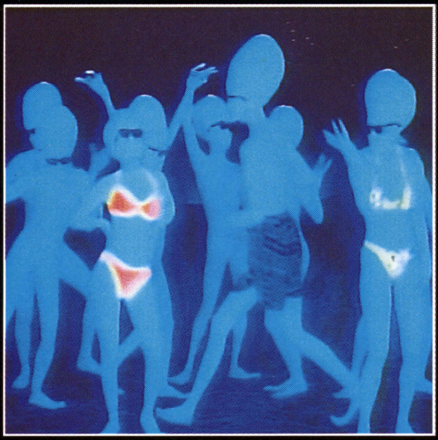

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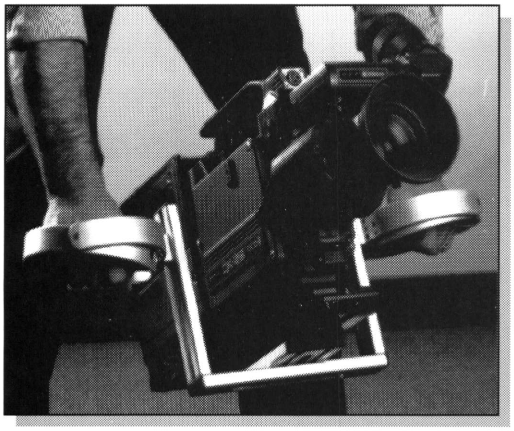

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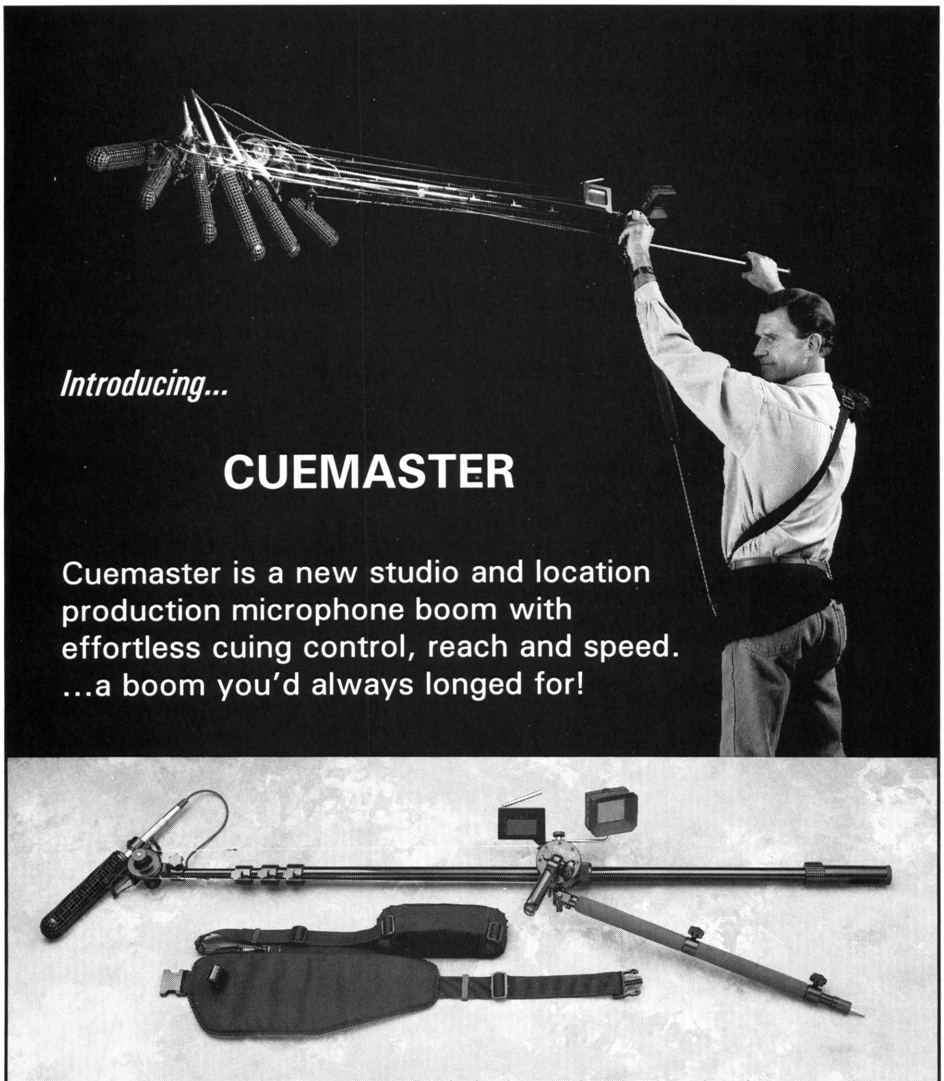

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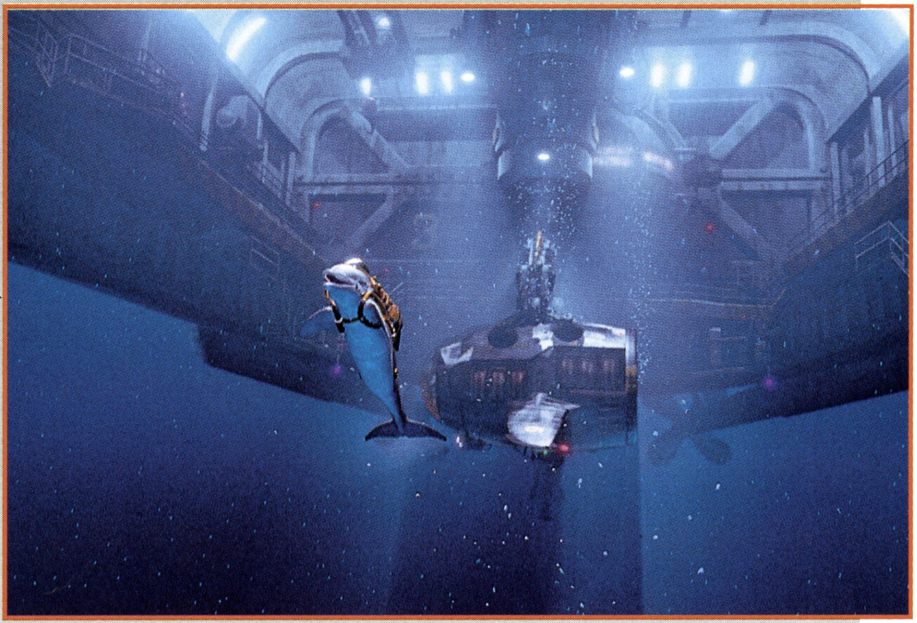

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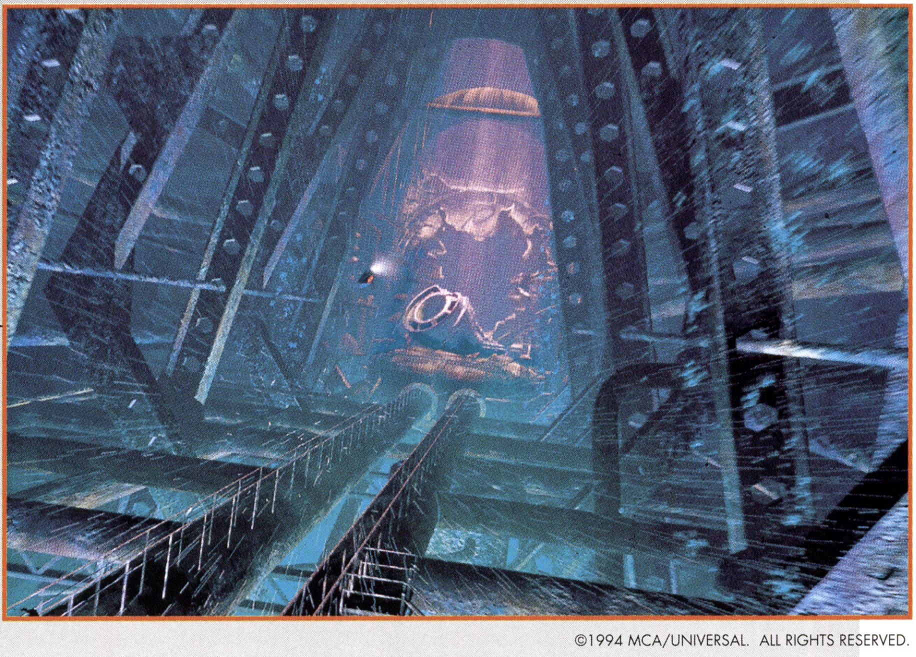

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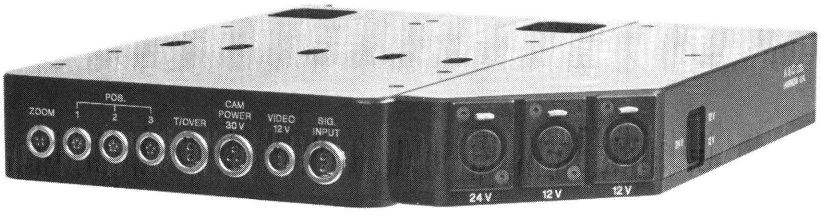
It used to take 6 batteries and 12 cables to do what 3 batteries and 3 cables (up the crane arm) now do. Accurate positioning. Endless pans and tilts. *Much* easier balancing.



New multiplex camera mounting plate. Function control circuits are *inside it,* close to camera for repeatable lens settings, no more tangled cables.

The latest version of the Power Pod is called the Mark Four. All ours are now Mark Fours. The factory has built in several improvements; we've added a few more. Here's a list:

1. No more wraparound cables

Key to most of these improvements is the new multiplex camera mounting plate (photo above). Control electronics for seven camera functions are now built into it. Those functions are: camera on-off, video tap, witness-mark camera video to monitor, focus, iris, zoom and power mattebox.

Unlimited pans and tilts

The seven cables for those functions used to come up the crane and drape around the camera; they could become entangled. Now they come from the mounting plate, next to the camera. The plate *moves with* the camera; tangles are impossible. You can pan and tilt continuously.

2. Fewer cables

Those seven functions used to mean seven cables from ground level up to the Power Pod. Power to the camera meant an eighth cable. Pan and tilt made it nine. High speed made it ten. Now it's three cables for everything, including camera power, pan/tilt and high speed.

Multiplex instead

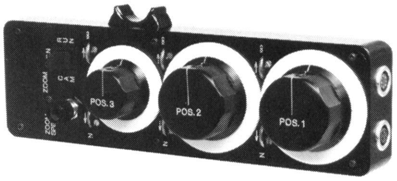
With the Clairmont-modified system, here's what those three cables do: The first cable is for pan and tilt. The second cable is a multiplex that carries four separate power sources up to the mounting plate— together with coded signals for camera on-off, focus, iris, zoom and power mattebox.

3. Clairmont's three video image signals

The third cable is our own multiplex. It gives you up to three video image signals (two more than the standard cable). You can monitor the video tap, the lens witness mark and the tachometer. Or the footage counter.

4. More control accuracy, at greater distances

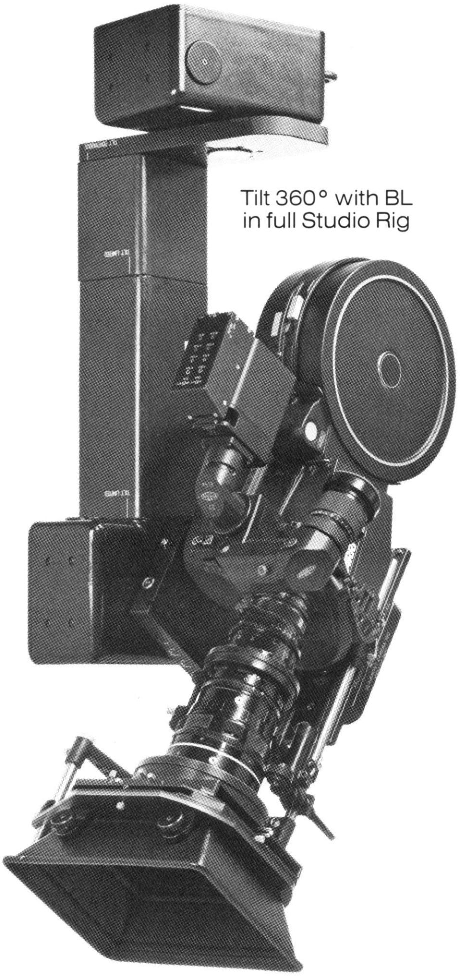
Long cable lengths cause voltage losses that diminish accuracy. Putting the control circuits in the mounting plate near the camera solves the problem. Focus marks and pre-set zoom start/stops can be precise and therefore *repeatable.* The system is now accurate to within the width of the engraved marks on the lens. The factory says that's true out to 500 feet.



Handset controls six camera/lens functions

5. Remote Handset

You use the Handset (see photo) at ground level, of course. It has three large rotating knobs. Numbers 1



Tilt 360° with BL in full Studio Rig

and 2 control focus and iris. Number 3 is a spare servo. You can use it for moving grad filters up and down with our power mattebox. Next to the big knobs is a small square switch, for camera on-off, and a small round knob that sets zoom speed. The rocker switch (on top in the photo) is for zooming.

6. Batteries: all at ground level

Pan and tilt run on their own separate power: 115VAC or two 24V batteries next to the control wheels at ground level. Everything else is now powered by one 30V battery, also at ground level. That includes high speed, up to 130 frames per second.

7. Choice of power sources

The 30V battery gives you a choice of power sources up at the camera mounting plate. There's a 12V for the video assist camera, a 30V for the Mitchell and a 24V for the new ARRI 535, the Moviecam and the Panaflex. Flip a rocker switch on the mounting plate and the 24V becomes two independent, isolated 12V sources.

8. Balancing is no longer critical

With earlier Power Pods, as little as a quarter-inch off balance would cause vibration. That's why we printed our Balance Guide and why we engraved Balance Marks on our Power Pods. No longer necessary. The Mark Four will work smoothly as much as *six inches* off. You can eyeball the rig; if it looks balanced, it probably is.

9. The Clairmont Power Pod Handbook

When you rent one of our Pods, you get a copy of our Handbook. That's been true since 1988; now there's a new Multiplex section. The idea has always been to help you set the Pod up faster.

10. The Clairmont Pod Introduction

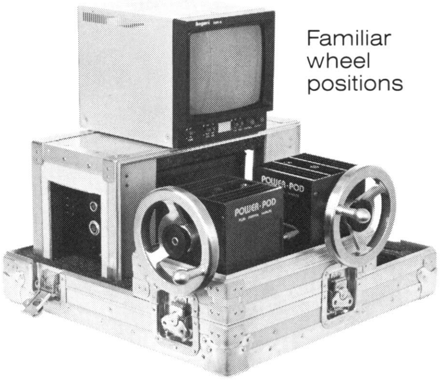
It has never been difficult to work with. But if you're new to the Power Pod, it can be intimidating. And a lot of people don't know all its capabilities. So part of prepping at Clairmont has been, and is, a short course to familiarize you with it.

11. Our own color coding and engraved instructions

To make setup easier, we've been color-coding our Pod connections since 1988. With the Mark Four, eight of them are coded at the factory; we code a further seven. And we engrave instructions ("To DC Input," for example) under the appropriate sockets.

12. Every cable you'll need, in one big bag

Each of our Pod cables goes out in its own sealed plastic bag. You can be sure that cable has been serviced and tested and not used since. After you tell us what camera you'll be using, we assemble every cable you'll need (each in its own bag) and put them all in one big plastic bag. You also get a complete set of *spare* cables, separately packaged.



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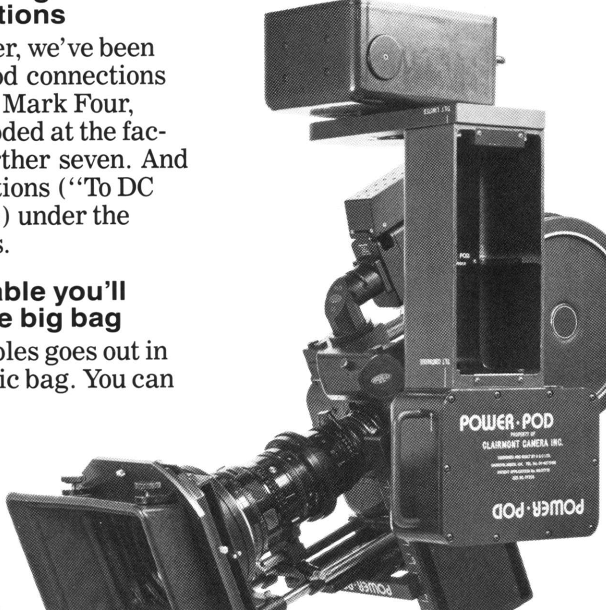

Top picture: two risers.
In this picture: one riser.
With no riser, Pod & 35-3
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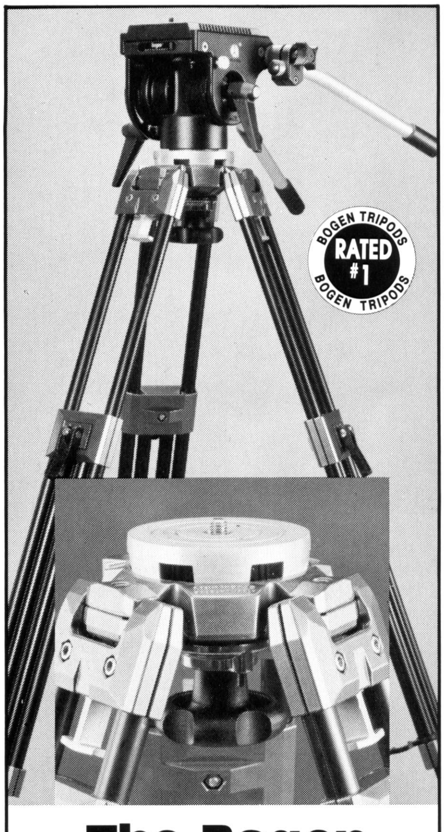

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Letters

HDTV Discussion

Thank you for publishing the HDTV Standards Discussion in the March issue. It was encouraging to hear that these ASC members not only care about the quality of television presentation, but are also working to influence the political and corporate powers to give us a format that will best serve the public over time.

Three points are clear from that discussion:

1) A progressive scan standard is necessary;

2) "Open Architecture" is necessary to present the program as it was intended; and

3) A screen design of the widest ratio (2.4:1) should be adopted so that it can accommodate the entire frame of the widest standard format, and the screen should mask in from the sides to form the ratio of all other program formats. The frame height would always fill the video screen top to bottom, and the frame width would extend to conform to the ratio of the original.

Anything else would be a compromise that we will regret in the future.

My congratulations to the ASC for taking on this cause. We lend our support to a forward-thinking, artistically responsible goal.

— Thomas Loizeaux
Director of Photography,
Local 644

The Revolution Will Be Covered in *AC*

Congratulations! The Revolution has begun! With the publication of Steven Poster's column on union reform, as well as the sporadic inclusion of articles such as the Reflections series, *AC* has escaped from the hundreds of pages of glossy press releases and has (re)turned to the pertinent philosophical/political and technical issues of our time. (In regard to the latter: there used to be a magazine subtitled The International Journal of Motion Picture Production *Techniques* that actually printed film stock tests, lighting diagrams, etc. Is it back?)

In response to Mr. Poster's column: dare we forget that movie making is, has, and always will be a show *business*? As with any venture, as the rewards increase, so does the intensity of the competition, and an extremely effective means of competition is barring your opponent from the game — in other words, keeping the highly profitable union jobs inaccessible to those without a card, despite their qualifications. Is this type of thinking beneficial to the art of filmmaking? No. (But how many members are in it for the art?!) Is it even fair? Probably not. Is it the "American way"? Definitely.

Inherent in this power to keep one's rivals at bay is the ability to choose those who are allowed to come along for the ride (i.e., nepotism). I have seen a costume supervisor hired solely because his wife was an influential exec (yes, he was incompetent); an "electrician" (read: gaffer's son) nearly burn down a soundstage because he was certain you pull the neutral first; a "grip" (read: key grip's brother) needing to two-man a four-step ladder because he was unable to lift it himself. Is this representational of all I.A. members? Absolutely not! Is this, however, an example of the behavior which is causing the I.A. to self-destruct? Absolutely.

Mr. Poster, your outline of solutions for "what we have to do to survive in today's market" was right on. To that list I would only add the following: establish a series of qualifications, specific to each local, which must be met by each new member (a return to apprenticeships?), and lower the current pension qualifications. There are a select group of members, especially in the grip and electric arenas, who, quite simply, should not still be working. Besides, after forty or fifty years of filmmaking, they deserve their piece of the billion-dollar pension fund.

The time has come for the union to reinvent itself; and like always, "invention is one percent inspiration and 99 percent perspiration."

— R.B.G.
I.A. 728

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A Non-Union Union?

This is in response to Steven Poster's article on union members. My outlook on this article may be different from that of others. I am not a new member; I am an actor with SAG and the wife of a key first assistant cameraman. I have absolutely nothing to lose by writing this.

Why can't the non-union crew members start their own union? It's awful how production companies can amazingly afford DGA members or teamsters, but hey — here's a great idea! Let's get non-union crew members who'll work 14 to 16 hours a day, and rip them off!

I'm very grateful for my union, but let's face it, crew people work a lot harder than any overpaid actor. I just hope some non-union crew member reads this and is inspired to do something for what they deserve. All it takes is one voice to get the ball rolling. It's awful that no one is watching out for these people.

Either IATSE should make it possible for people to join the union and actually work, or non-union members should start their own union. And if that doesn't work, I'm going to start my own union, WSOACS — Wives and Significant Others Against Crew Slavery.

— Tracy Wells
Los Angeles

More Irony

A fellow reader, Jennifer Epps, justifiably takes you to task in the March '94 issue over the errors found in the October '93 issue (the same issue in which Ms. Redshaw's insightful piece on pride in one's work appeared).

And now, in the March issue, Bob Fisher's profile on Jack Cardiff, BSC, opens with a glaring factual error in the first sentence! Natalie Kalmus was not Herbert T. Kalmus' daughter (and certainly not his protégé). Rather, she was his first wife in what has been well-documented as a decidedly less-than-harmonious marriage. Her involvement with Technicolor was based more on legal maneuverings than on true partnership.

A publication such as yours, devoted solely to the technical and aesthetic aspects of cinematography (past, present, and future) should check its facts more carefully.

— Theodore E. Gluck
Los Angeles

BETTER

than anything they've got.

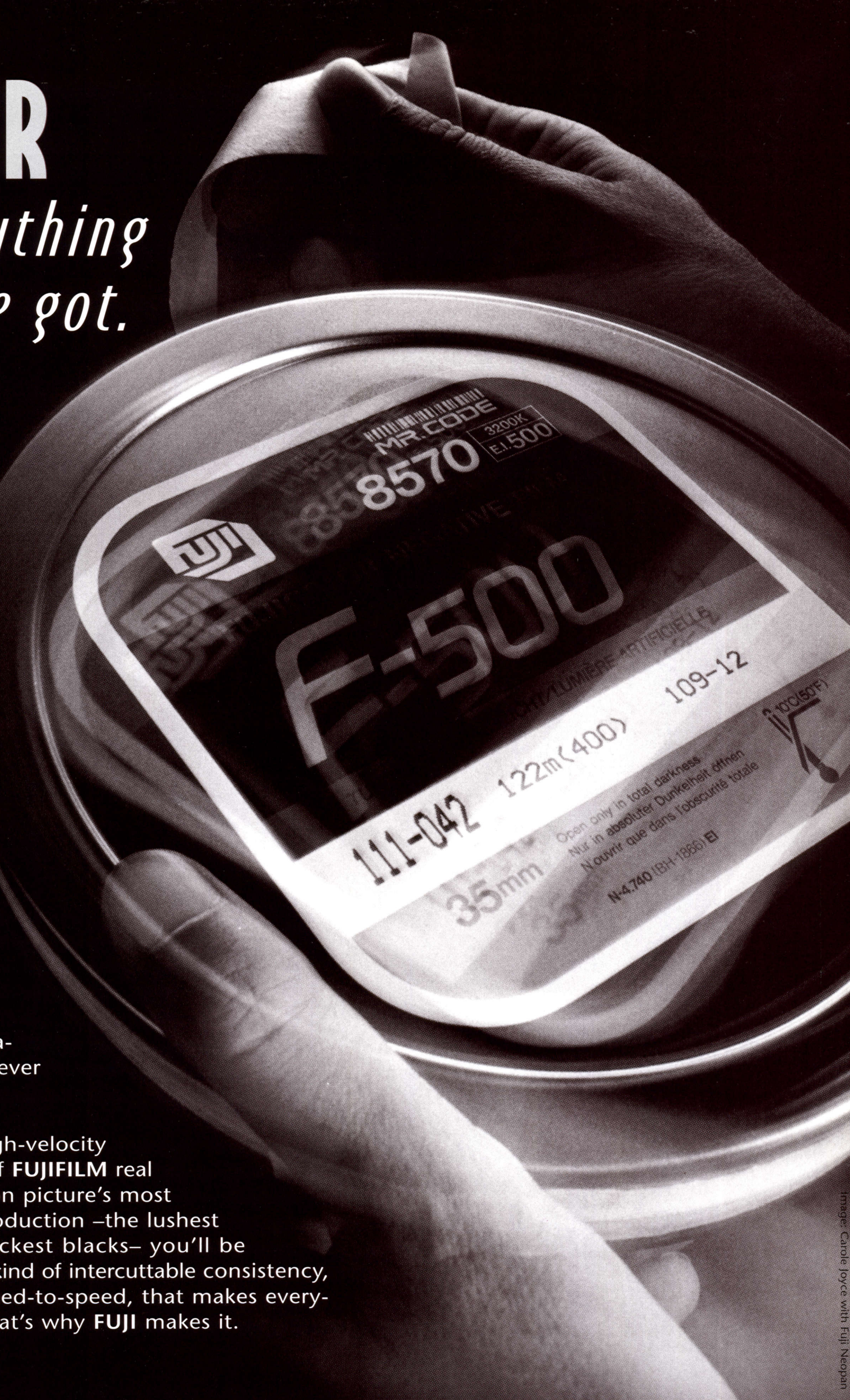

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Image: Carole Joyce with Fuji Neopan

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Production Slate

Venue Production Burgeoning

compiled by Marji Rhea

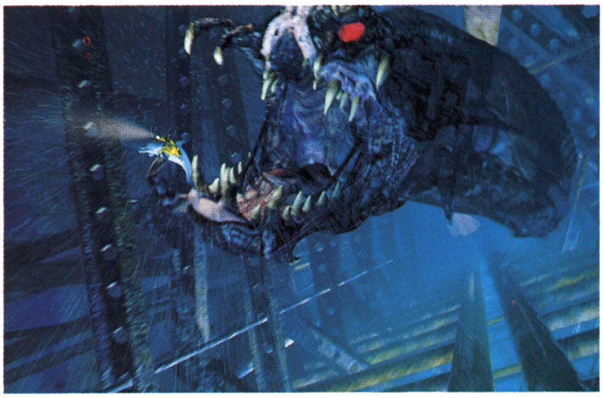

Photo courtesy of Rhythm & Hues

Photo courtesy of The Works

Left: Seafari's *CGI leviathan by Rhythm & Hues.* Below: Audiana's *CGI DJ and MC by The Works.*

Seafari

In Rhythm & Hues' latest motion-based ride, *Seafari* (at Matsushita's new theme park in Wakayama, Japan), ridegoers plunge deep beneath the ocean, pick up a whale escort, venture inside an underwater volcano, survey the wreckage of an oil supertanker, find the remains of a missing sub, and are harassed by a sea monster.

The motion ride film begins in two theaters, holding four motion bases with a capacity of 15 people each. The audience learns in the pre-show that they are visiting an oceanographic institute and will be getting a VIP tour of the facility, but when they reach the loading bay, they are informed that their tour has been canceled and that their whale-shaped sub has been assigned the task of chasing down the institute's other sub, which has disappeared.

Work on the project began in the spring of 1992, when Rhythm & Hues producer Ellen Coss spent six months in a preproduction phase, finalizing the storyline and creating detailed storyboards. Meanwhile, at a nearby stage in Burbank, preparations were being made to mock-up the motion base so that the dailies of choreographed scenes in progress could be perfectly synchronized to the motion.

The Rhythm & Hues team broke the animating job down into four categories: the mechanical world of subs and ships, the leading actors (dolphin and sea monsters), other sea life (the whales), and the ocean, which came alive with particles, currents, swells, mists, and bubbles, all created with computer graphics. "*Seafari* is completely organic," says executive producer Sherry McKenna, "an underwater simulation in which the challenge was to make a totally believable liquid world with all its wonderful, random imperfections."

For information: Rhythm & Hues, 732 N. Lamer St., Burbank, CA 91506, (818) 845-4437, FAX (818) 845-2093.

Adventures in Audiana

The Works, a Southern California entertainment development firm, has completed postproduction for a high-definition video, titled *Adventures in Audiana*, for Japanese electronics giant Matsushita/Panasonic. The Hi-Vision video presentation stars a cast of computer-generated characters and takes the audience on a trip to the mythical, musical world of Audiana, where they travel from the gritty Rock City to classical Orchestria and on to Jazzland.

Produced completely in computer animation and scheduled to open this summer at both Wakayama's World Resort Expo and the World Festival Exposition in Mie, Japan, as well as at all of Panasonic's showrooms, the production was executive-produced by The Works from their original concept and production design. The company, whose recent clients include Warner Brothers Recreational, MCA Development, Suntory Brewing, UCC Coffee, and Tokyo Gas, has also produced the pre-shows and soundtracks for both pavilions.

Creative director Keith Melton of Infinity Filmworks worked from original concepts by the Works executive producer Fredric Hope. Character design and art direction were provided by Christian Hope. MagicBox Productions did modeling and rendering and assembled the complex environment of color, digital effects and animation that make up the digital world of Audiana. The entire soundtrack was produced in Japanese by The Works from an original score by composer Chip Smith.

For information: The Works, 820 East Ocean Blvd., Long Beach, CA 90802.

Endless Summer II, The Ride

Endless Summer, The Ride, a motion simulation ride produced by Rocket Motion Pictures, was released concurrently with the feature film *Endless Summer II* and will be distributed domestically this summer in high-defini-

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Right: ***Mr. Film's computer-animated, like, really awesome tube in Rocket Motion Pictures'*** **Endless Summer II -- The Ride.**

Photo courtesy of Rocket Motion Picutres

tion video simulators in selected beach towns on both coasts, and in the fall in large-format motion theaters. The ride film was shot in 65mm and VistaVision at varied frame rates, allowing for release in several distribution formats.

The ride begins with a chopper run, blasting down a canyon in Molakai to the ocean. The audience shoots out over the sea and over rolling swells, then launches off 15-foot wind-blown breakers with a windsurfer and her companion, engages in a jet ski chase, and surfs the towering waves off Oahu. The film climaxes with two computer animation fantasy shots, during which the audience surfs at high speed through an endless tube of a breaking wave, and rides a two-thousand foot tsunami.

Principal photography was completed in Hawaii using the *Endless Summer II* production crew, shooting with a specially modified wave runner (jet ski), boogie board, and helicopter. Surf photographer Don King and large-format specialist Lee Parker shared director of photography duties. Hawaiian surf champion Brian Keaulana piloted the camera jet ski in the surf sequences.

CGI sequences were produced by Mr. Film on Silicon Graphics (SGI) workstations, and output to various formats. Filmed optical transitions were completed by Imagica USA and video postproduction was completed using the Flame with real-time Reality Engine. Sound effects were cut digitally, integrating Foley effects recorded at Banzai Pipeline, and mastered in a multi-track discrete format. The ride is edited by Dana Brown, who also edited and co-wrote the feature film.

Mr. Film also produced wave effects using Wavefront software, and created foam particle effects with Dynamation. Animators applied a fog effect and many depth cues to render the "endless" tube look of the wave, and applied three different layers to create an anamorphic cloud-like surface in 3-D space. The team used the turbulence, Newtonian, and gravity fields within each layer to emulate the cluster-like form of foam. Lighting and reflection techniques further added to the realistic surfing experience.

The ride was conceived and produced by the Rocket Motion Pictures director/producer team of Barnaby Jackson and P. Zachary Matz, and is one of the first independently financed large-format ride films to be offered for general distribution to the motion simulation community.

Rocket Motion Pictures has also produced *Afterburn*, one of the first ride films designed for a portable simulation system, and *The Unisim*, designed for MCA/Universal Theme Park Development.

For information: 225 Santa Monica Blvd., 4th Floor, Santa Monica, CA 90401, (213) 933-5535, FAX (213) 933-5536.

Mystery Lodge

Mystery Lodge, a journey into the Native North American West that opened at Knott's Berry Farm on Memorial Day weekend, was conceived, developed and produced by BRC Imagination Arts of Burbank, California. In development for more than three years, the new attraction is Knott's largest expansion since the addition of Bigfoot Rapids in 1988, and one of the park's most technically advanced projects ever. The attraction's earlier incarnation as *Spirit Lodge* at the 1986 World's Fair in Vancouver, British Columbia attracted much attention all over the country.

Guest travel beneath an ornate, hand-carved ceremonial archway alongside the rushing waters of Knott's Thunder Falls, from which flames and magical images leap. A hand-painted facade, designed by British Columbia's noted Native American artist Doug Cranmer, symbolizes the lore and legends of Native Peoples of the Northwest Pacific Coast. Crossing a wooden bridge and entering a cave opening hewn from an imposing stone facade, visitors are surround by a full-size replica of a traditional tribal house. The lights dim for the pre-show, which gives visitors background on the culture and traditions of the native peoples. As lightning fills the sky, guests are invited inside the lodge to take refuge from the approaching storm. Inside the lodge, an old storyteller brings to life the traditions of the native peoples of the Northwest Coast.

The presentation is based on traditions of the Namgis people of Alert Bay, Cormorant Island, British Columbia, and BRC conducted extensive research with cultural spokespersons and historians of those peoples. Because of the work of German-American anthropologist Franz Boas and his local guide, George Hunt, in the late 1800s, this native American group's traditions are among the most fully documented of all North American natives. (Members of the Hunt family of carvers, descendants of George Hunt, helped produce some elements of Knott's Indian Trails area.)

Architectural and design elements include hand-edged and textured cedar, imported from the Northwest coast for the lodge facade and all decorative woodwork; custom rock work to resemble the natural rock of the northwest coast; native North American artifacts and representations such as house posts, canoes and boardwalk; and four waterfalls with flames, fog and other special effects.

BRC's numerous credits include design and production of Space Center Houston for NASA, as well as award-winning attractions at the World's Fairs in Seville, Spain in 1992 and Seoul, Korea in 1993.

For information: BRC Imagination Arts, 824 N. Victory Blvd., Burbank, CA 91502, (818) 841-8084, FAX (818) 841-4996.

Space Shuttle America

Electrosonic Leisure Systems has completed installation and commissioning of a 70mm projector, 17 video monitors, a digital audio system, and a data-link control system to operate Six Flags' first motion simulator attraction, *Space Shuttle America*. Guests view a 70mm film by Dream Quest Images from two 50-seat Intimin hydraulic motion-

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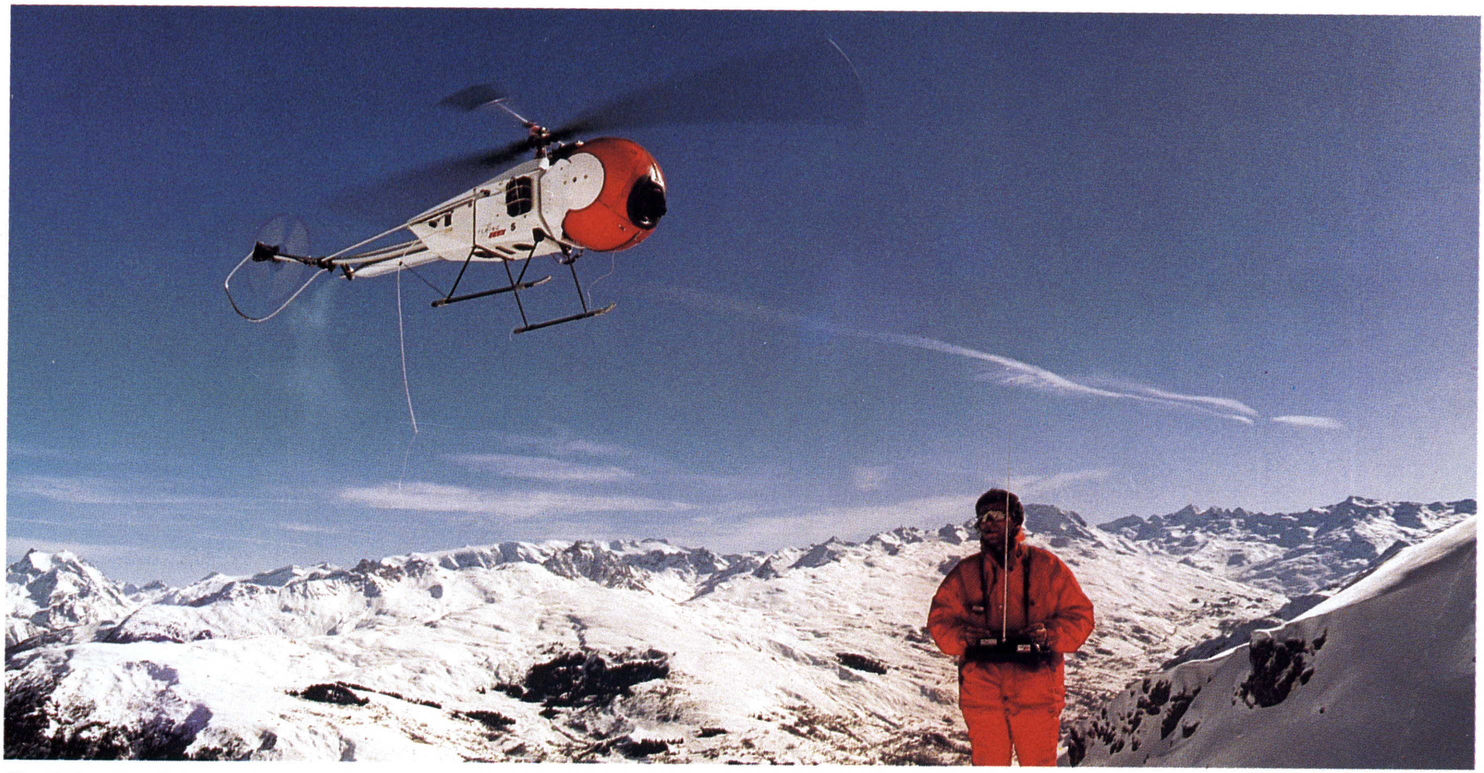

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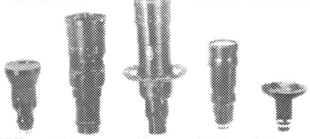

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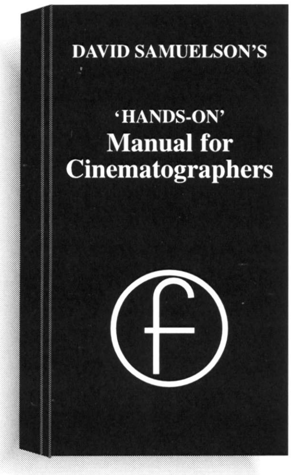

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base systems, and experience a fast-paced and perilous trip to the moon. Six Flags, which worked closely with NASA on the details of the attraction, needed a control and audio system to support the realism of the design and to unite the different types of media involved — motion picture, laser video, and digital audio.

In the pre-show, ten 13-inch video monitors and two 35-inch video monitors recreate the feeling of Mission Control's Situation Display. In the ride-ready area, three 27-inch monitors prepare guests for their trip. Once inside the shuttle cargo bay, guests see a take-off sequence on two 35-inch monitors, mounted on either side of the 22' X 45' main viewing screen. As the video scene ends, the main screen comes alive and the guests are off on a 70mm simulator ride. The soundtrack, by Frank Serafine, is played back on a digital audio system that is locked on the projector through Electrosonic's proprietary time code (EFM) printed directly onto the margin of the print, for digital audio quality and absolute frame lock between picture, sound and motion bases. Altogether, *Space Shuttle America* relies on five videodiscs and 12 channels of digital audio to create the 20-minute attraction.

Holding all the technical elements together is a control system utilizing Allen Bradley's PLCs on a data highway used for networking subsystems. This includes the projector and motion-base systems; the master PLC in the control rack; and the audio, operator control panels, and other control room functions. The distributed control system simplifies the wiring into two twisted pairs in the control rack, and allows the projector and motion bases to be treated as modular units, making the subsystem architecture and engineering design reusable and expandable without rewiring.

Also contributing to Six Flags' *Space Shuttle America* theme park ride was Electric Image, whose ElectricImage Animation System was used by Dream Quest Images and Motion Pixel to produce many of the effects in the ride's film footage. The ride marks one of the first times that a personal computer-based rendering and animation package was used to create a motion-picture-resolution theme park ride. The team at Motion Pixel worked with a beta version of ElectricImage Animation System 2.0 to create the asteroid field, hyperdrive effect, space debris and moon approach, as well as all of the star fields in the ride. Motion-control model photography of the moon base and structural elements were also integrated with animation created by ElectricImage.

For information: Electric Image, Inc., 117 East Colorado Blvd., Suite 300, Pasadena, CA 91105, (818) 577-1627, FAX (818) 577-2426. Electrosonic Leisure Systems, 3320 N. San Fernando Road, Burbank, CA 91504, (800) 433-7763, FAX (818) 566-3045.

Dino Island

When Iwerks Studios began developing *Dino Island*, a simulator film featuring dinosaurs, they sought animators who could realistically animate the beasts, who would occupy the screen for most of the film's four-minute length. Iwerks' Edward Newquest spent six months researching high-end CGI companies, and was most impressed by the images he saw at Paris studio Ex Machina, a group of 35 artists, engineers and digital effects supervisors who had previously worked on Iwerks' 3-D film *Haunts of the Olde Country* and the company's Turbo Ride film *S.O.S.* (the latter of which won Ex Machina prizes at the Imagina International Film Festival, as well as the IAAPA award for most innovative attraction in 1991).

For *Dino Island*, Iwerks wanted dinosaurs that were as believable as possible, dirt and all. "We actually wanted them to be a little rough and dirty, with watery eyes," explained Newquist. "It's a dead giveaway when they're too clean." To animate the dinosaurs, Ex Machina used proprietary software that their R&D group has developed over the past three years, software that permits continuous articulated motion with skin and muscles, as well as texturing. The project required around 200 animator days and the final computing committed around 18,000 CPU hours. The live-action film that is the centerpiece of the show was shot by Magic Window Productions, and the convincing roars of the dinosaurs is the work of sound designers and engineers at Soundelux of Hollywood. Composer/conductor William Ross created the musical score, recorded by the Utah Symphony Orchestra.

Audiences enter the Turbo Ride by way of a pre-show, which explains the premise of the adventure: a group of scientists has been airlifted

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along with a vehicle to a remote island, recently formed by a volcanic eruption, to explore the island and investigate strange signals emanating from it. They discover volcanic canyons, rivers of lava, and prehistoric plants, and, of course, dinosaurs. The vehicle shudders with the vibrations of the beasts' footsteps, careens over the edge of a cliff, and is caught at the last minute in the claws of a pterandon and borne aloft, where they find themselves in a dogfight among winged dinosaurs. The riders are eventually dropped into the forest below, where their fall is broken by the tree canopy. However, the awaiting tyrannosaurus rex sends them into another high-speed chase. After the rex is cut off by lava flows, the scientists attempt to cap the volcano to keep it from destroying the island and set remote-controlled explosives in the volcano. As the team is airlifted out by helicopter, the crater collapses in a huge blast and all parties return home.

For information: Iwerks Entertainment, 4540 West Valerio Street, Burbank, CA 91505-1046, (818) 841-7766, FAX (818) 841-7847.

New Location-Based Entertainment Co.

Jack Morton Productions (JMP) has created a Special Projects Group to specialize in location-based entertainment. It is an enlargement of the company's Exhibit & Environmental Design Group, and in its new form will be providing services including master planning, themed environmental design (casinos, retail, restaurants); theme park and location-based entertainment attractions (rides, shows, entertainment centers); special-venue theater experiences (simulators, ride films, 3-D, large format); and stage shows and live events (Las Vegas-style spectaculars, Olympics-style ceremonies, interactive productions).

The company's credits include elements of the World of Coca-Cola Pavilion in Underground Atlanta, the Hearst Castle Visitors Center in San Simeon, California, the Miller Brewing Company Visitors Center in Milwaukee, and four exhibits at the Smithsonian Institution in Washington, D.C. JMP also created the opening ceremonies for the 1994 World Cup.

For information: JMP, (212) 727-0400.

Jurassic Tour

Metavision has created for Matsushita the *Jurassic Tour* simulator ride, which takes visitors on a time journey back to the age of the dinosaurs. In the story, an ancient base station for time travel has been discovered deep beneath Shirahama Japan, and the scientists who made the discovery are now inviting passengers on time-travel adventures. After exploring the station's excavations, passengers are seated within the body of a time transporter, a huge amphibious vehicle with glide-wings. The nearly 40-foot-wide viewing port fills with a lush Jurassic landscape, from which a friendly corythosaurus emerges. It's followed by a not-so-nice baryonyx, which attacks the transporter and sends it crashing down a cliff and into a river, which winds through caverns, turns into raging rapids, and washes the transporter over a waterfall. The vehicle lands precariously, only to be attacked by a tarbosaur.

Metavision had only ten months from concept design to opening to complete the project. The ride film incorporates a variety of production techniques, including stop-motion animation, models, miniatures, high-speed photography, live-action helicopter shots and CGI. A three-story rapids and splash tank was built for a 35mm underwater camera to splash and crash through. The miniature Jurassic terrain took up an entire soundstage and is populated by a variety of dinosaurs, "puppets" with up to 50 moveable joints. Several more dinosaurs, seen in the background, are radio-controlled. Taking it all in is a 13-foot-tall motion-controlled camera on a 32-foot track, created by Precision Machine of San Luis Obispo.

For information: Metavision, 350 N. Glenoaks Blvd., #208, Burbank, CA 91502, (818) 848-5929, (818) 848-2120.

Showscan Films

Showscan Corporation and Celador Entertainment, a division of Rod Paul Productions, have produced two stock car racing motion-simulator films at Charlotte Motor Speedway using Showscan's patented film process. Written and directed by director/cameraman Rod Paul, the films allow the audience to experience racing from the driver's point of view by mounting the Showscan

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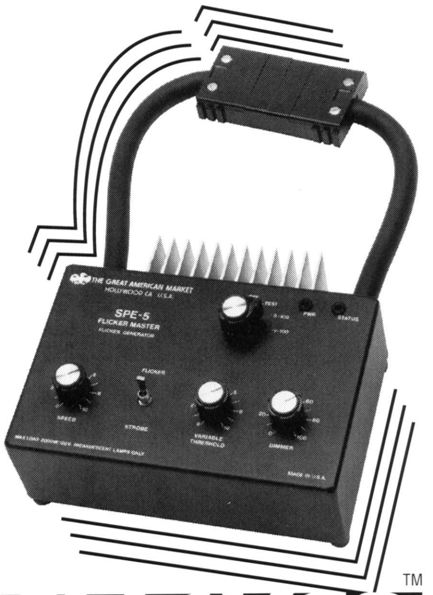

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Production began at the Charlotte Motor Speedway on May 30. The first film is intended for release in late summer and the second in mid-1995.

For information: Showscan Corporation, 3939 Landmark Street, Culver City, CA 90232-2315, (310) 558-0150, FAX (310) 559-7984.

Texas Adventure

Texas Adventure Inc. has opened their first Encountarium F-X Theater in San Antonio, across the street from the Alamo. *Texas Adventure*, in development for five years, is a 21,000-square-foot, three-story family entertainment complex built to provide tourists with a historical perspective of the events that shaped the famous battle of the Alamo and the skirmishes that followed. The attraction features display exhibits, a merchandising shop, and a multi-media wrap-around programmed mural presentation. The culmination of the attraction is an 18-minute theatrical presentation which includes animated props and sets, animatronic figures, smoke effects and a meeting with three-dimensional ghost-like recreations of the characters of the battle.

In the preview area to the main theater, murals by Joe Musso bring to life the early history of Texas, beginning with the colonial period, when Mexico encouraged settlers to come to the state after winning independence from Spain. Narrator Sam Houston introduces the audience to the characters who played important roles in the drama. Guests enter the main 172-seat theater replicating the Alamo's Long Barrack, and they soon find themselves amid a battle replete with smoke, animatronic and holographic characters, cannon shots, and musket fire.

Combining live actors with film and video precluded cuts in the action; long, numerous takes had to be done until they were perfect. Because of the interplay between ghosts and live props, the lighting conditions of the shot had to match those in the theater — even the angle from which candlelight would illuminate the room.

The ghost images are sourced from two Pioneer laserdisc machines processed through a line doubler and projected via two Barcodata 1100 projectors, to enable the team to keep the projection blow-up of the video image to a minimum. Timing consideration with the two projectors is critical, as certain characters on one videodisc projection have to interact with those on the other.

Texas Adventure is the first of several Encountarium F-X Theatres planned around the world, each to develop its theme around the historical and cultural attributes of the host setting. Future site considerations include San Diego, California; Branson, Missouri; and Portsmouth, England.

For information: The Texas Adventure, (210) 227-8224, FAX (210) 227-9855,

Imagica

Academy Award-winning specialty film producer/director Keith Melton of Infinity Filmworks recently completed a film project for The Landmark Entertainment Group-designed Thailand water park, Fantasia Lagoon. Entitled *Imagica*, the film is projected onto a water screen and was produced by Melton for Landmark as part of a multi-media show.

Landmark designed Fantasia Lagoon as a component of two malls, each an eight-story building housing a theme park on the eighth floor and a water park on the roof. The entire water show lasts 18 minutes and incorporates live actors, pyrotechnics, fireworks, a volcano, and a film that is projected onto a 40' X 60' mist curtain, providing the illusion of characters floating in mid-air.

Imagica tells the story of a young hero who comes to Fantasia Lagoon to save the Princess of Light from the villainous Volcanus. The princess and the boy are featured in the show both as live characters and on film. Volcanus, also on film, is represented by a 40-foot fabricated volcano which emits lave-like explosions of water and light.

The film was shot in Paris by ECA2, under the director of Yves Pepin, using 35mm 25FPS film. All of the characters in the film were shot against black, creating the illusion, when projected onto the water screen, of floating in mid-air.

For information: Infinity Filmworks, (213) 851-7788, (213) 851-2612.

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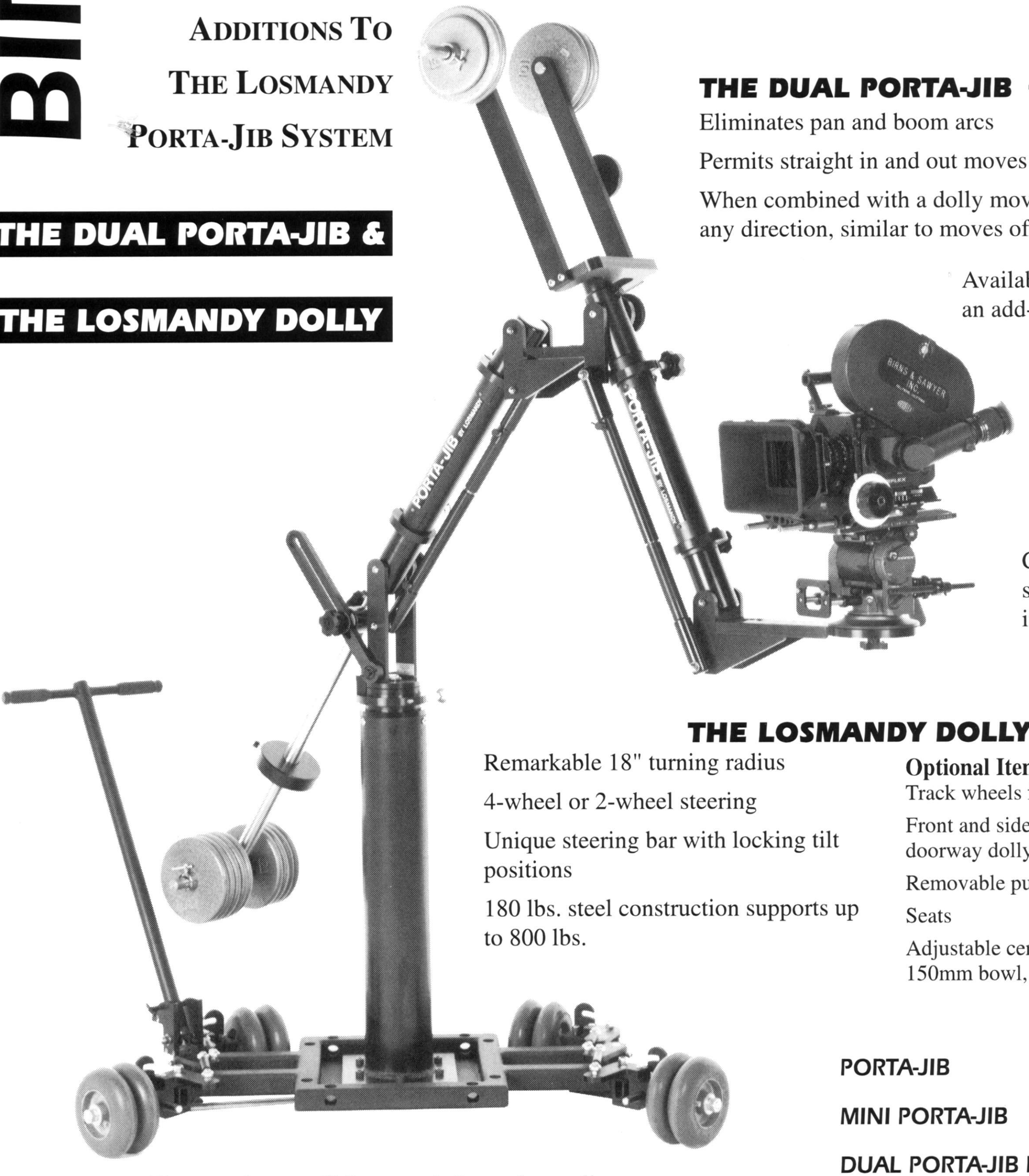

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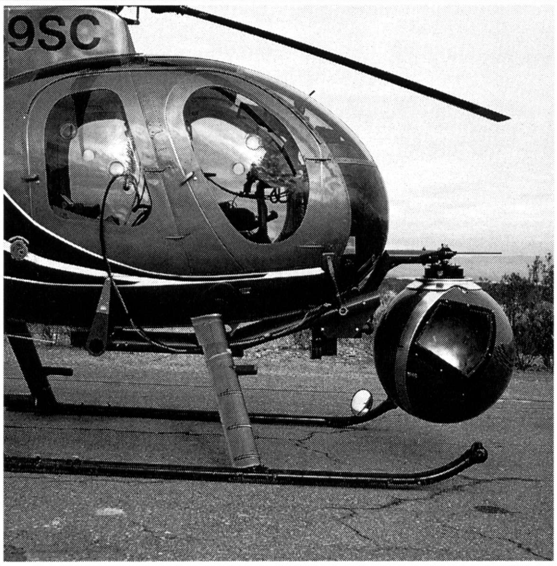

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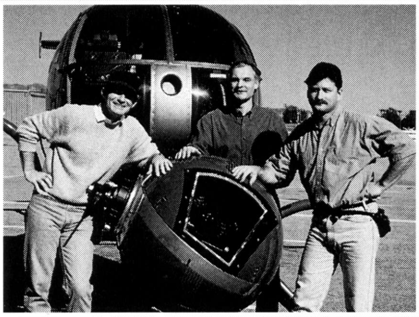

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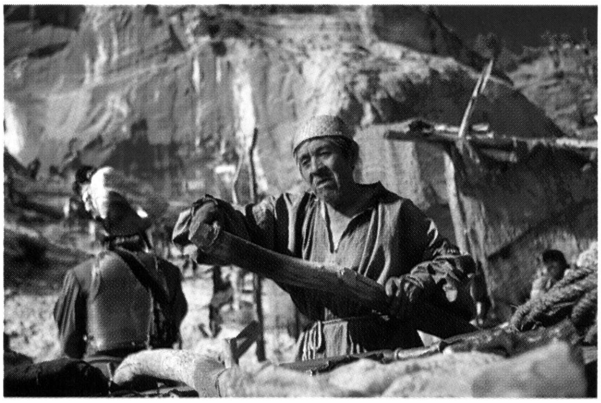
The Rigors of *Zion—Treasure of the Gods*

Project's documentarian discusses the genesis of a unique special-venue film.

by Richard J. Davenport

When the developers of the first visitor center at Zion Park in Utah began researching their project, they were struck by the tremendous impact of large-format films in other similar venues, and became determined to create a film to entertain, educate and astonish the audience with a historical tale set in that fabulously beautiful part of Utah. Director Keith Merrill, who wrote the resulting script and devised a commando-unit approach to the project, teamed with cinematographer Reed Smoot to shoot the dramatic core of the movie; Mike Hoover and crew were hired to film the exploration and climbing sections; and Ron Fricke (*Baraka*) was assigned to cover the time-lapse elements. I was asked to shoot a brief documentary on the making of *Zion — Treasure of the Gods* and had the opportunity to discuss the project with some of its creators, and to take a look at how technology has continued to facilitate quality production in this medium.

Film production in the 65mm/15-perf Imax format proffers a different set of factors for the producer to consider — not only in the physical production of the film, but in script, distribution, and duration. For example, with a screen 80 feet high (and audio to match), the storyline can become lost in the visual impact of the experience. In the early days of cinema an audience would pay money for the simple thrill of a moving image, but in these days of media literacy they expect much more. Too many venue films simply open the door to an art gallery full of wonderful unconnected paintings where the audience may be impressed but not involved. The format also currently makes anything longer than the standard half-hour duration unfeasible and unwieldy (ask the projectionist the next time she changes a five-foot-wide roll containing three miles of 70mm movie stock!), and distribution options, while they continue to increase, still make it difficult to justify expensive actors — a film shot for 65/15 simply does not work in any other format or venue.



Photos by Richard J. Davenport

Right: ***The extras, many of them descended from the Pueblo rebels, preparing to act out the aggression of their ancestors against the white man. With an elaborate system (utilizing knots on a cord to signify each day), they turned on their oppressors at the same time on the same day throughout the region. The drama of these scenes was greatly enhanced by the use of extensive camera moves.***

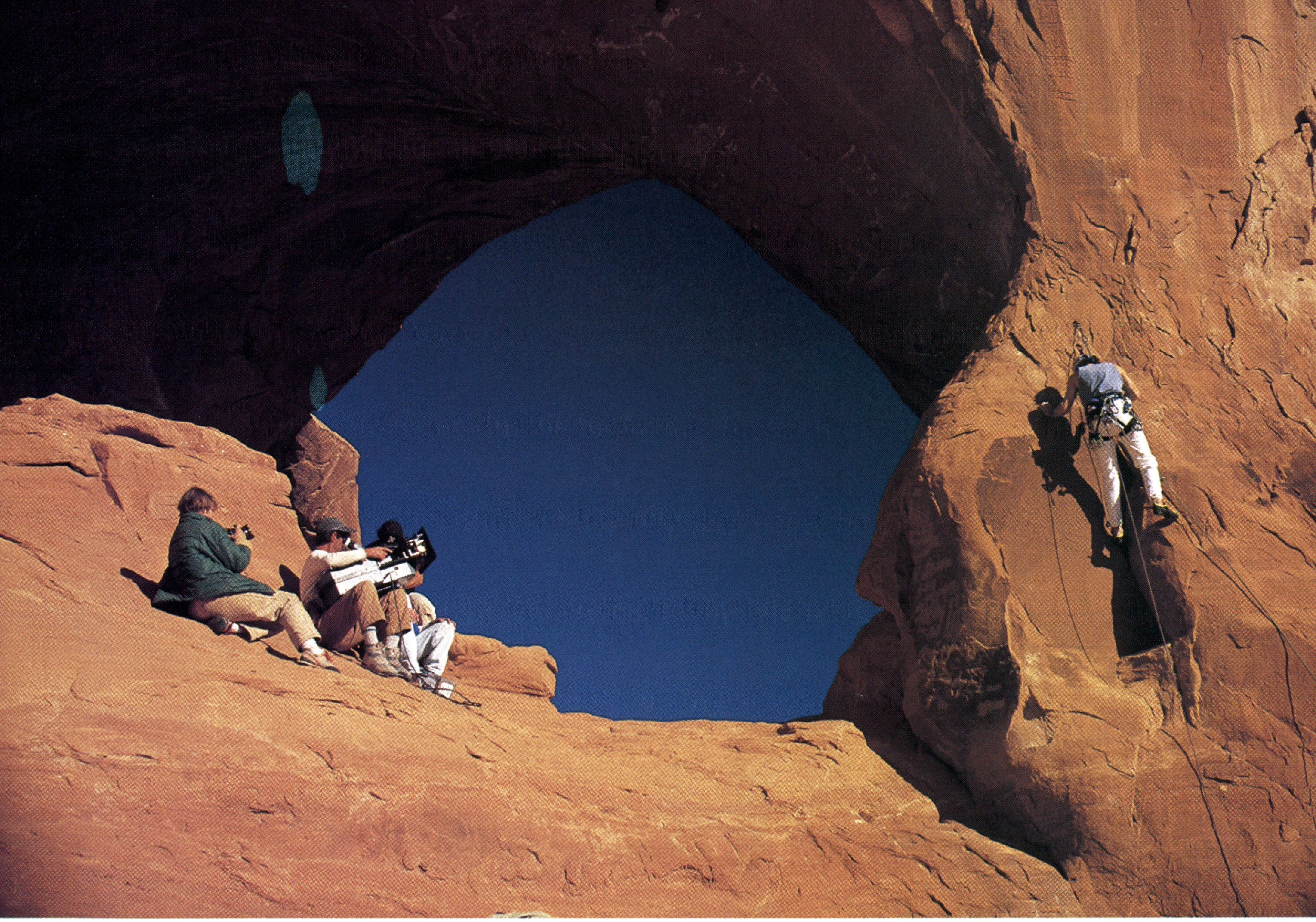
Many other limitations, of course, must be taken into account during the actual physical production of the film. To start with, the screen has to be filled with engaging images, but faces should not appear too large; the most significant information has to be about two-thirds of the way down the frame due to theater design and screening layout; each 1000-foot film magazine runs for just three minutes and at four frames per foot (6 ft./sec at 24 fps); and camera noise is unavoidable. And all of this makes multiple takes difficult.

There are other considerations as well. Isolation of a subject through depth of field selection is not an option, as it does not make sense to present an image that big with only half the screen in focus. Camera moves and cuts have to be slower so as not to disturb the audience. The production design, costumes and makeup must withstand intense scrutiny on the huge screen. And screening and editing a 35mm printdown can be frustrating (although Michael Phillips at Avid Technology is currently working on a system to handle 65mm on their non-linear, 24 fps editing system) and requires considerable experience to assess the true impact of a scene prior to full-scale projection.

But the opportunities for creative filmmakers who can overcome the limitations — such as Smoot, Merrill and company, veterans of *Grand Canyon, the Hidden Secrets* and *Yellowstone*, among others — are so breathtaking that the format continues to flourish.

The cinematographer and director, joined by the production designer, gaffer and first assistant cameraman from those two films, made up the "dramatic" unit. Merrill was keen to stretch the medium and to provide emotionally charged sequences within the storyline of his movie, and worked hard to dispel the myth of the rift between large-format and 35mm photography.

"This film was an unusual one for this format in the amount of dramatic footage shot with actors," explains Smoot. "There were plenty of setups and



our unit shot a lot of film. The quick-change magazines and lenses really helped. We were also very happy with the enhanced opportunity to build camera moves using dollies, cranes and a hot-head system," he says, referring to the new camera used for the shoot, MSM Design's Model 9801.

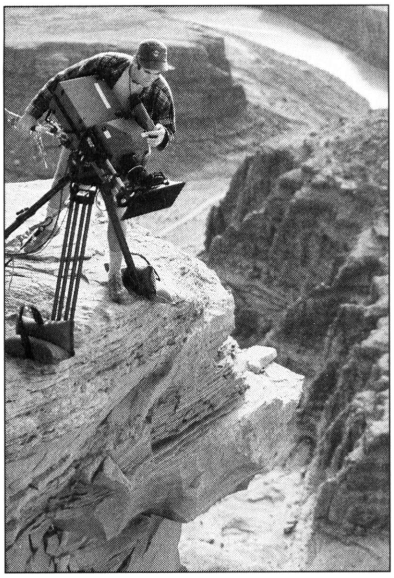
In one of the film's biggest dramatic scenes, set amid the livestock and trappings of a mining village designed and built for the film, a hundred or so extras dressed as Pueblo mine workers, Spanish soldiers, priests and administrators reenacted (with great enthusiasm) the violence of the Pueblo rebellion of 1567. Rigging points left over from an earlier visiting film crew (from *Planet of the Apes*) facilitated hauling the camera gear up scree slopes to the base of the mine shafts. But the weather was cold and the actors, many of them children, could not remain outside for long. What with the hand-to-hand combat, stunts, horses, fires and the choreography of complicated camera moves, the set began to resemble any other location shoot.

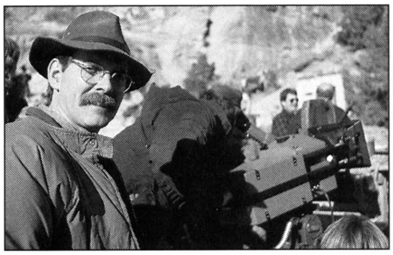
A central theme of the movie was the exploration of Zion Canyon by three groups: the ancient Anasazi, for whom the area had a deep spiritual significance; Mormon explorers, with their Paiute guides; and, finally, modern rock-climbers. Over the course of a few weeks we travelled over some of the most extraordinary landscapes in the U.S., from Zion to Moab, where the wind scours the flaky Navajo sandstone into exotic shapes given gruesome names by the rock-climbing fraternity; to Knab and Dead Horse Point, where the crew hung over a precipice thousands of feet above the snaking Colorado river; to the finger canyons of Kolob, where actor and camera were suspended, circuslike, on a tightrope over the abyss. We waded through miles of freezing runoff water in a slot canyon with sheer cliffs on either side reaching up to the clear blue sky (ever wary of rain and lethal flashfloods, we watched for clouds). And everywhere we saw the petroglyphs and other, more subtle signs of a native American presence.

The small "action" unit carried few of the conveniences of a Hollywood production, but both actors and crew were fit and well able to manage in the wilderness. The "actors" were actually professional climbers and guides, who demonstrated a striking degree of dedication — not to mention the trust they displayed in allowing someone else to secure a knot that was the only thing preventing them from

Cinematographer Mike Hoover, assisted by camera assistant J.P. Beaghly, directs a climbing sequence. Due to filming restrictions at Zion Park, much of the movie was shot in Moab, Knab and other locales in Utah. Despite the "gnarly" sandstone rock, these rugged areas have long been a mecca for climbers such as the star of this sequence, Doug Heinrich.

Clockwise: ***Hoover takes advantage of the morning light to shoot an (out of frame) actor/stuntman/climber tackling the rock face; dramatic-unit cinematographer Reed Smoot lines up a shot in the Utah wilderness; Werner Braun, the lead cameraman and a climber of extraordinary repute, hangs out with Hoover; Marty Mueller with his prototype 65mm/15 perf camera, affectionately known as "Model 9801."***

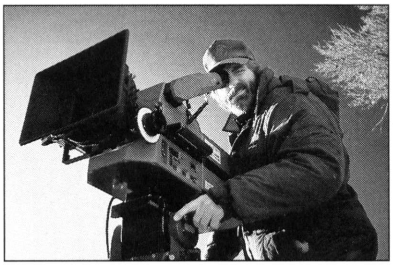


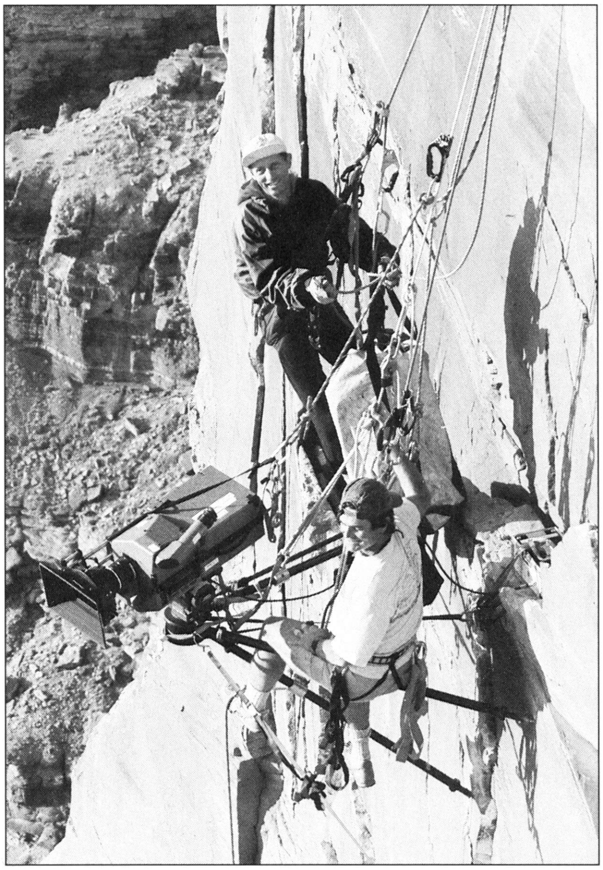


plunging hundreds of feet to a messy, if quick, death.

For one shot, the riggers placed a dolly on a three-foot rock ledge above a sheer drop, while the climber prepared to fall 30 feet at the end of a rope. Camera design, weight and efficiency were never more important; as Mike Hoover explained, "The problem with a static shot of a climber above a landscape is scale. The audience has no perspective and therefore no idea of the relative height and position of the subject. When we move the camera, the whole shot comes alive. The viewer can 'place' the climber in her environment and understand something of the excitement and risk involved."

When I first joined Hoover, his wife and co-director, Beverly Johnson, camera assistant J.P. Beaghly and their intrepid team of "vertical riggers" (recruited from the Yosemite mountain rescue service), they were in Zion National Park at the top of a sheer vertical drop known as Moonlight Buttress. Hoover was dangling in mid-air while framing a shot with the prototype of a new camera built by Martin Mueller of MSM Cameras. Mueller later visited the set for feedback on his design and discussed the innovations and improvements he was seeking.





"Every piece of equipment is challenged beyond the original vision of its use,"says Mueller. "They're mounted in precarious positions, put in taxing environments, and thrown about. Further testing this equipment are the escalating expectations of the director of photography, who is looking to give the filmgoer a new experience.

"We probably wouldn't have thought to hang the entire camera system from the magazine handle to test the preload on the magazine electrical contacts," he continues, "but that's how we found out we needed more spring pressure. Shots in a minus 10-degree Celsius cave with cold stock gave us new information on pitch compensation. The symmetry of the magazine led to a tactile label on the feed side lid for easy identification in the changing bag. All these seemingly small details let to significant improvements in usability. The people out in the field with the system are really in the firing line; this stuff has to work *now*. Even 20 seconds fussing with a little detail can mean not getting the shot, which means that there is no such thing as a little detail."

Mueller's company conferred with cinematographers and assistants in designing the new model camera and, Mueller says, "their requests became a mantra — smaller, lighter, faster, more flexible. [They asked for] cameras that function as systems like those in 35mm, with the ability to integrate with all the standard accessories." MSM set out to devise a system that would provide improvements in several areas while enabling the use of hot heads, cranes, gyro mounts and even Steadicam; the resulting system is about a third lighter than the Imax Mark II and Imax IWSA cameras (which Smoot

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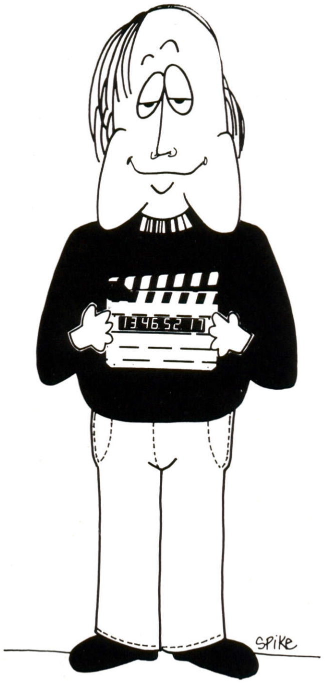

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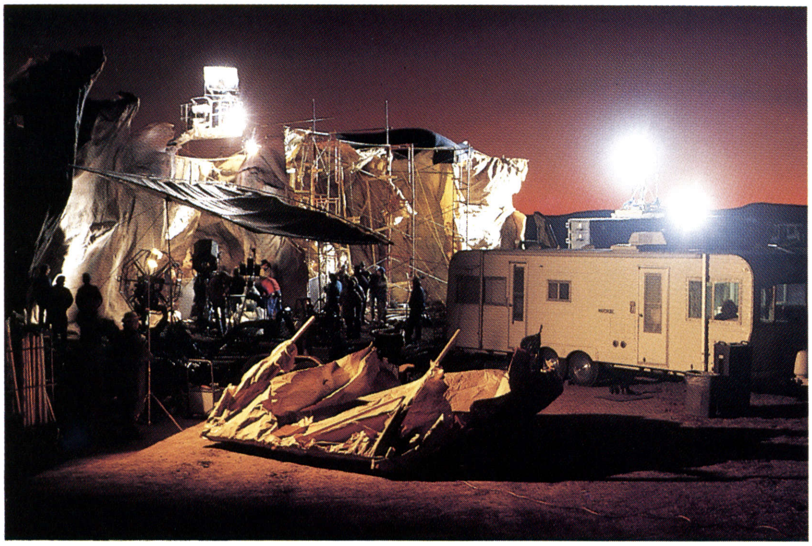

The film's script called for a "flash-flood rescue scene." For safety, access and numerous other reasons, a set, replete with water dumpsters, was built to replicate the slot canyons of Zion Canyon. This shot was taken just as the sun set, revealing what must be one of the clearest views of the stars anywhere in the U.S.

used on *Yellowstone*). According to Smoot, it's "the first 65/15 production camera that we've run into that is designed as a system, like Panavision, with interfacing components, uniform lenses and an integrated follow focus."

The two units on the *Zion* shoot had different requirements — the action unit needed portability, but the dramatic unit needed speed, since the story content required many more setups and the shooting of a lot more film than is customary with 65/15.

Key grip Steve Graves points out that large-format production locations tend to be remote, and "usually the trekking is much more labor-intensive than the actual shooting. Secondly, this format lends itself to dynamic shots. Attaching the camera to a boom arm or crane creates the best shots, in terms of movement and foreground. So when we pack into a location, we aren't just heaving the camera, but a dolly and hopefully a boom of some sort." A lighter camera, then, reverberates into the rest of the technical setup — the crew can get in and out more quickly, which means less manpower and more shots. The 20-foot Enlouva crane used on *Zion*, for example, required 16 fewer counterweights (at 25 pounds each) than usual. "The lighter system can make the difference between a doable shot and an undoable one, between settling for a static shot or going for a mind-blowing image," says Graves.

The system features square-mount lenses that can only be mounted one way. The solid lens mount and streamlined lens design (without bulky and confining cages) made the scales more visible, which facilitated stop and focus adjustment. The variable speed rate and integrated intervalometer made many shots easier. The 180° shutter allowed the use of low lighting (such as torches in one scene) giving an edge on exposure and saturation.

A one-piece, pre-threaded magazine made it possible to reload quickly. The camera can be handled by one person and used on a variety of heads. For one shot using an Enlouva crane and hot head, the camera focuses on a gold cross, pulls back to reveal the priest who is wearing it, and then goes backwards through the door of a church (specially built for the feature), following him and revealing the vistas outside. The camera floats, the shot looks

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natural and the move is invisible.

Production requirements and the cinematographers' personal tastes led to the use of most of the film stock options available from Kodak. Hoover stuck with 5245 (the prefix "52" applies to both 35mm & 65mm stock) for most of the exteriors, although on one occasion, at the base of a slot canyon, he pushed the 5296 stock by one stop. With correction performed later in the lab, this gave him the necessary 1000 ASA to pull off the shot. Meanwhile, Smoot generally went for 5248, with 85 filter correction, in his exteriors. He found 5297 useful for extending the daylight and was happy with the results. The interiors were shot with high-speed 5296 stock.

Reed admits a weakness for elaborate density control filters, and has gathered a large collection featuring lines, angles and shapes not found in the average rental house. These filters allow a bright sky to be brought under control; the 15-perf format often shows large amounts of sky, and the audience's attention must be focused on the foreground action.

Due credit should always be given to the active pioneers of this medium, Iwerks and Imax, who have come to represent one of the greatest and most theatrical formats available. Industry interest has again been roused by Vittorio Storaro's recent remark that 65mm would be his format of choice for future projects, and by the keynote speeches given by Douglas Trumbull and Stan Kinsey at the recent Showbiz Expo West. Large-format venues and films, led by audience demand, continue to show a healthy expansion. In this instance, technology has enabled the expanding vision of the filmmaker to be realized. ☙

This article is dedicated to the memory of Beverly Johnson, who died in a helicopter crash in the Ruby Mountains of Nevada on Sunday, April 3, 1994.

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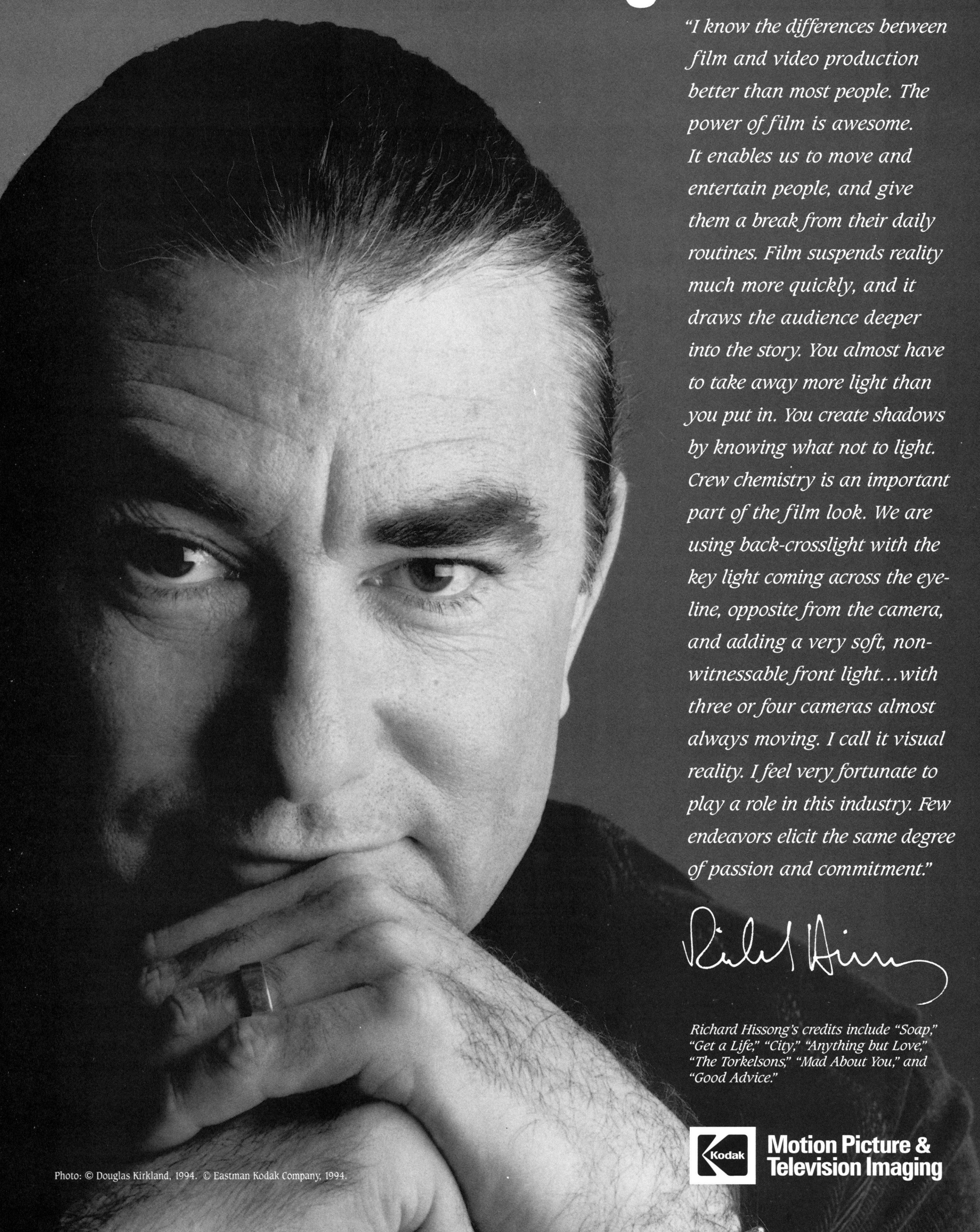

"I know the differences between film and video production better than most people. The power of film is awesome. It enables us to move and entertain people, and give them a break from their daily routines. Film suspends reality much more quickly, and it draws the audience deeper into the story. You almost have to take away more light than you put in. You create shadows by knowing what not to light. Crew chemistry is an important part of the film look. We are using back-crosslight with the key light coming across the eye-line, opposite from the camera, and adding a very soft, non-witnessable front light…with three or four cameras almost always moving. I call it visual reality. I feel very fortunate to play a role in this industry. Few endeavors elicit the same degree of passion and commitment."

Richard Hissong

Richard Hissong's credits include "Soap," "Get a Life," "City," "Anything but Love," "The Torkelsons," "Mad About You," and "Good Advice."

Kodak **Motion Picture & Television Imaging**

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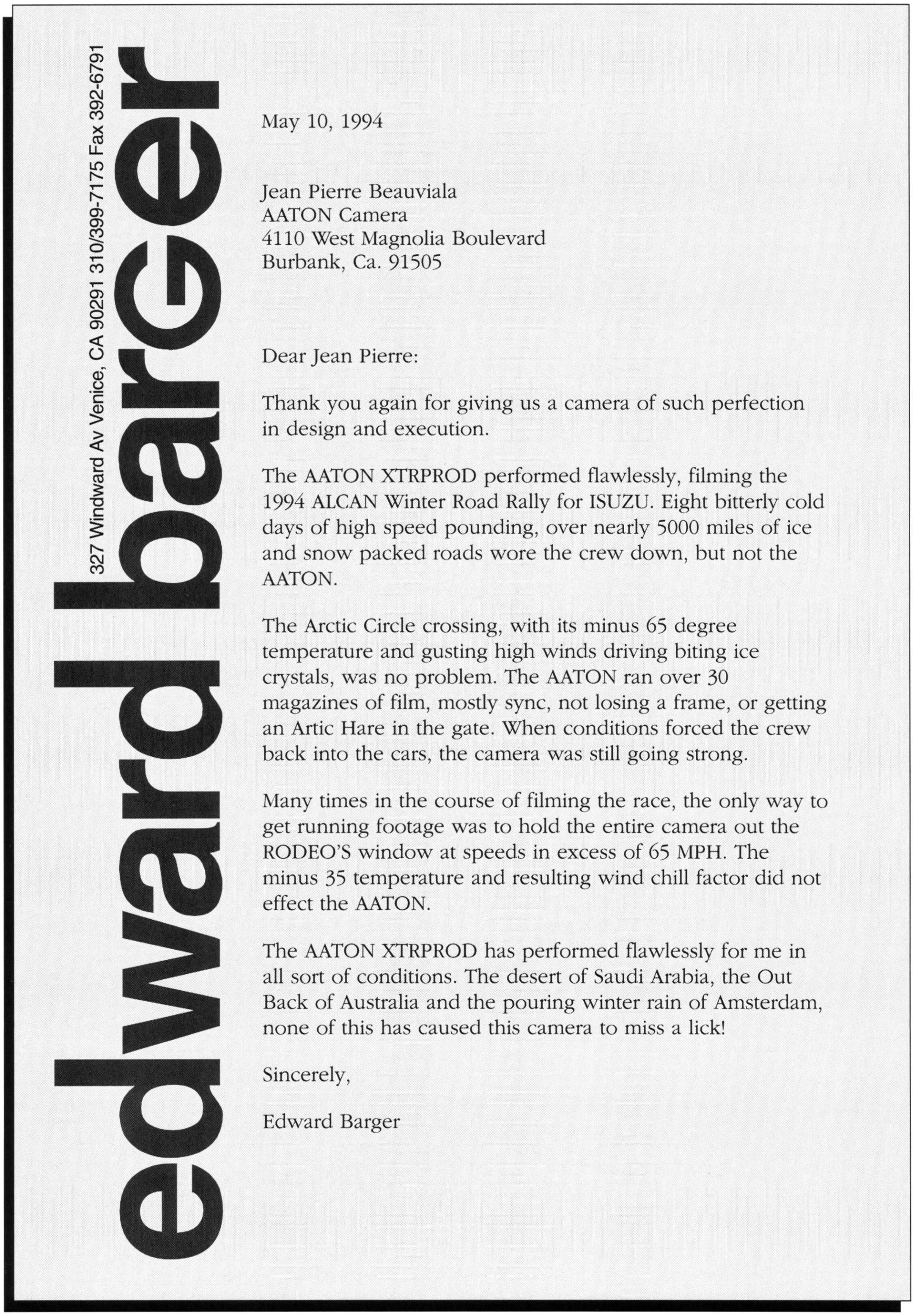

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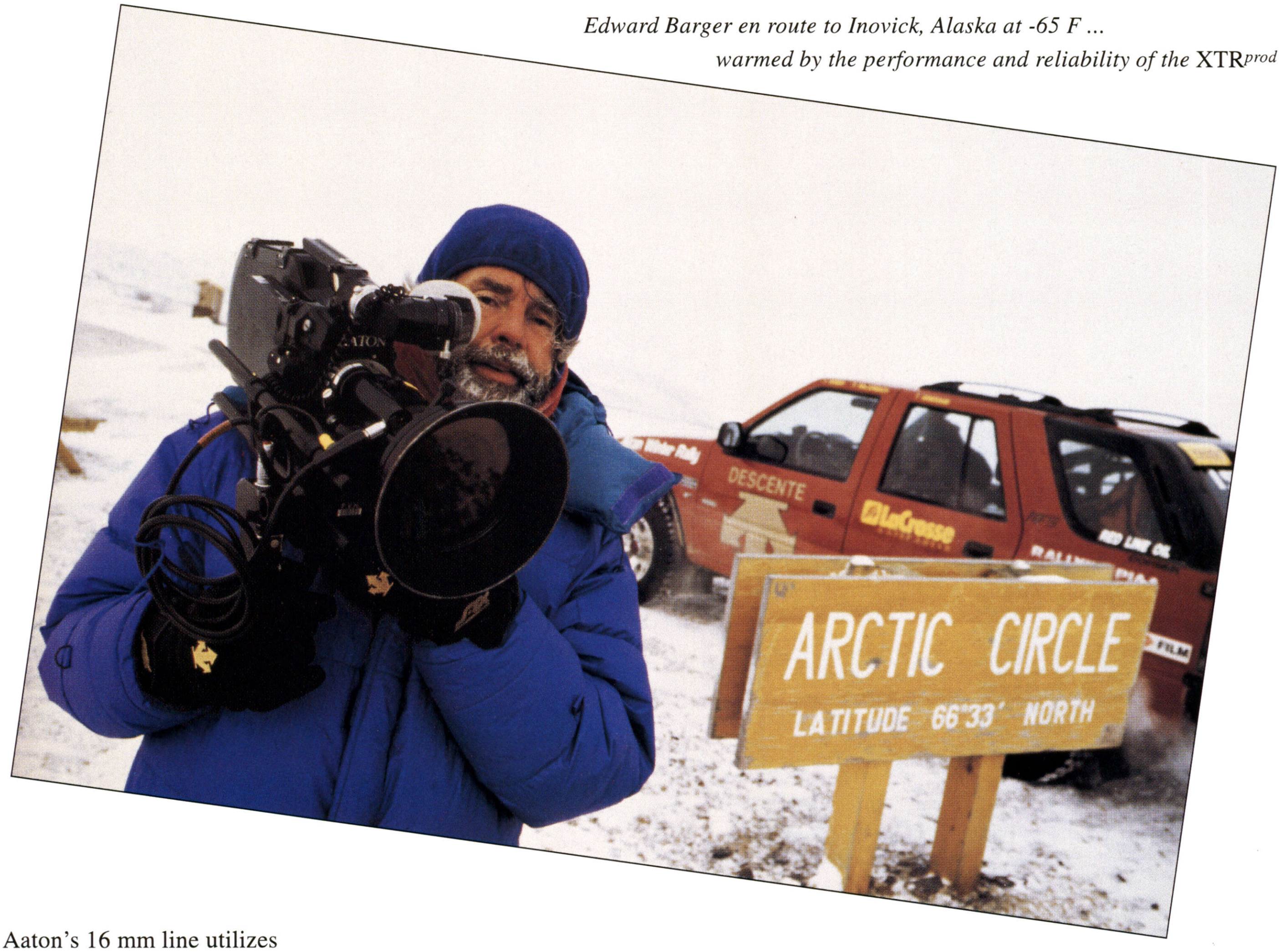

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Classic Techniques Enhance *The Journey Inside*

A trip through a chip in a spectacle-sized format.

by David Heuring

Since its debut in 1970 at the World's Fair in Osaka, the Imax format has been the king of spectacle. Cinematographers have dragged the behemoth cameras to the far corners of the earth, from the highest peaks to the depths of the oceans, to document the world's wonders. Regardless of subject matter, the impact of moving pictures on a five-story-high screen is literally breathtaking.

Until now, however, the power of the Imax medium has been applied for the most part to documentary subjects. Against the background of the constantly evolving world of special venue films, an experienced group of filmmakers has set out to change that by using traditional narrative techniques in an Imax film.

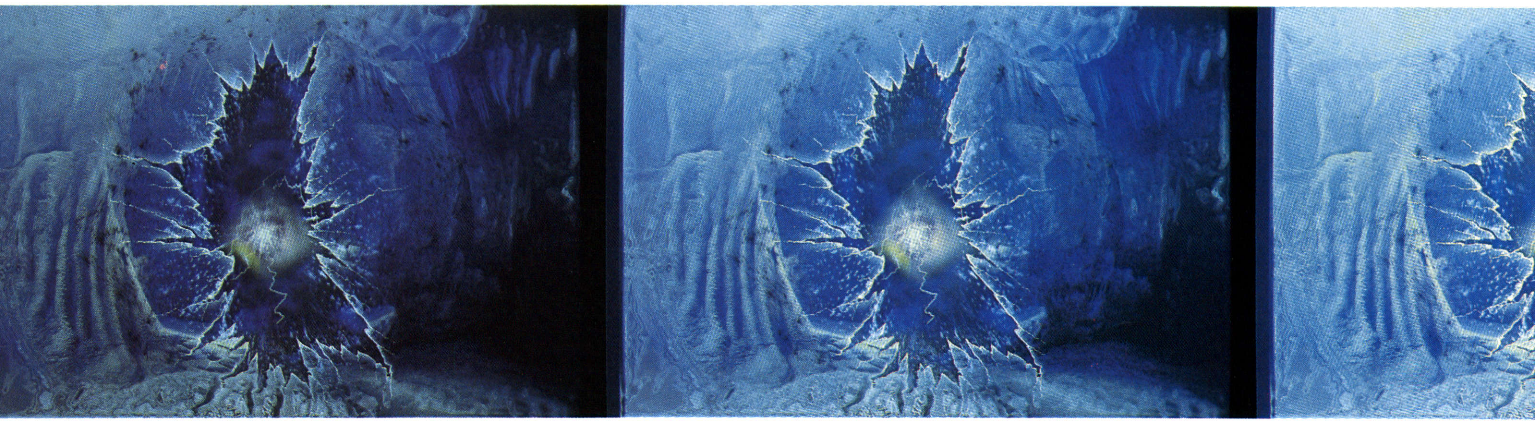
By all accounts, naysayers were legion. Sets would have to be ridiculously huge. Lighting requirements seemed on a par with those of Las Vegas. No infrastructure existed to support special effects. Countless complications made postproduction a forbidding path.

On their side, the filmmakers had, of course, talent, dedication and experience. They also had the Intel Corporation, the makers of the Pentium and other computer chips, and the expertise of supervising producer Trudi Rohla from Dick Clark Corporate Productions and producer Adam Moos. Intel decided to make a film educating the public about how computer chips are made and used; the result is an Imax film with multiple camera shots, Steadicam shots, handheld shots, a narrative script (polished over dozens of revisions), actors, locations, production sound, elaborate makeup effects, specially constructed sets, and more than 40 feature-film quality special visual effects shots, including animation, motion control, CGI, and extensive optical work.

Director Barnaby Jackson came up under the tutelage of Douglas Trumbull, and helped design the Showstar and CP-65 large format camera systems. Recalling the genesis of the long project, Jackson says, "We were about to attempt something that nobody had ever attempted. So we needed to go back and use the techniques that are proven."

Perhaps the most important technique was hiring the best people. Jackson's cinematographer was John Hora, ASC, whose fantasy/sci-fi filmmaking experience includes *Explorers, Gremlins, Gremlins 2: The New Batch, The Howling, Honey I Blew Up the Kid,* and Episode 3 of *Twilight Zone — The Movie.* Supervising visual effects for Jackson was Peter Anderson, whose 20 years of photographic and effects experience includes involvement in nearly 60 features and television films and seemingly every notable venue production.

In a recent interview, the



trio of Jackson, Anderson and Hora seemed to be amazed by their own accomplishment. The filmmakers applied an amalgamation of standard feature techniques to a venue situation, and came up with a hybrid that may closely resemble — or at least prefigure — what will be playing regularly at the mall in a few years. In order to successfully take that step, however, they had to break some rules.

"We talked to a lot of people who had worked on other Imax projects, and they basically told us what couldn't be done," says Hora. "There was list after list of 'You can't do this, you can't do that.' We watched every Imax film we could get our hands on. You want to see the bad ones, the ones that sort of failed, to see what had gone wrong, but they aren't as easy to get.

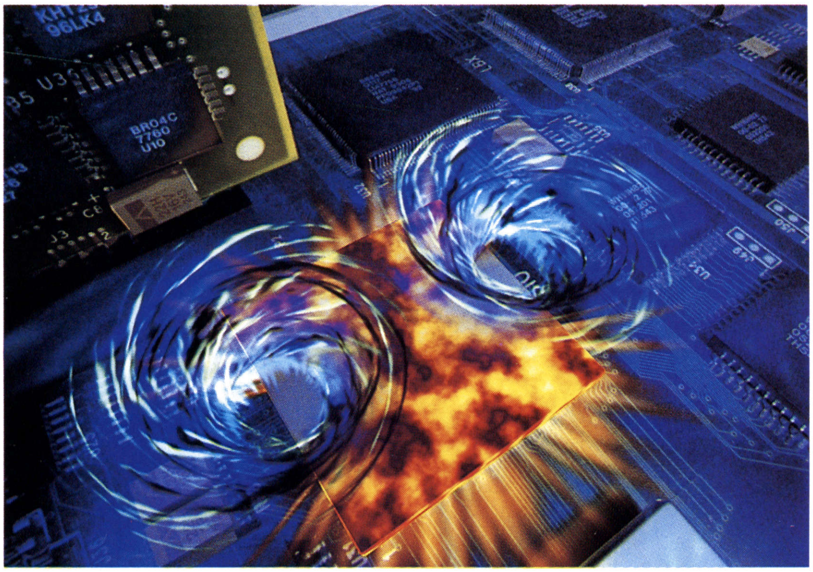
"*At the Max* (see *AC* August '92) was a crucial film for us to see, because clearly they successfully violated rules," says Jackson. "We appreciated their bravery. We were initially told that we couldn't do a close-up, that everything had to be master, that we couldn't move the camera, and that there would be no point in even bringing a dolly or a crane on this production."

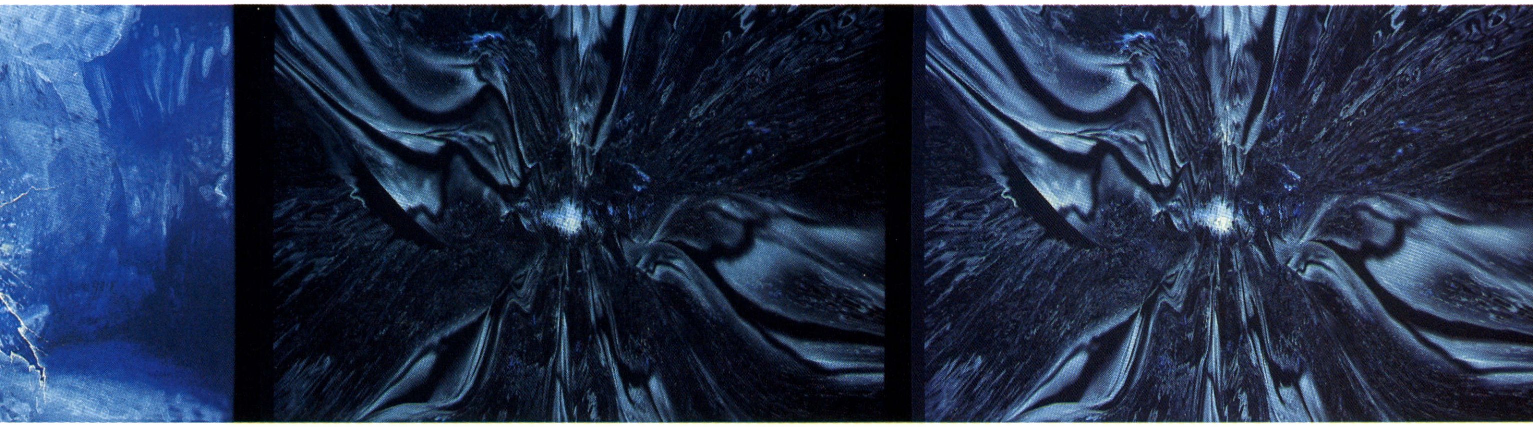
The filmmakers looked at the problem with an eye towards the big bulky equipment and lighting requirements of an earlier day. "With the huge Imax cameras, we were in a world that existed in the Forties and Fifties, when [filmmakers were using] Technicolor cameras and BNCs and so forth. The equipment was heavy, and the lighting requirements were big, but they still managed to make great films. Our whole film is really traditional in that way."

"I take my hat off to Barnaby," says Anderson. "The film works because everything was so well thought out. There's rapid action, there are tight shots, there's all of what's considered to be conventional film language. But it's not just to do it, it's to move the story forward. There's none of what I call the 'music video syndrome.' It's what we think a great movie would have. *Lawrence of Arabia*, for example, has a very kinetic camera on a big format and it works. This is the biggest format, and the same type of philosophy went into developing it. The sets, the cameras, actors, everything took into account the format. The editor, Billy Goldenberg, deserves a lot of credit. Much of it works simply because of the way it was put together and planned. Every aspect was considered."

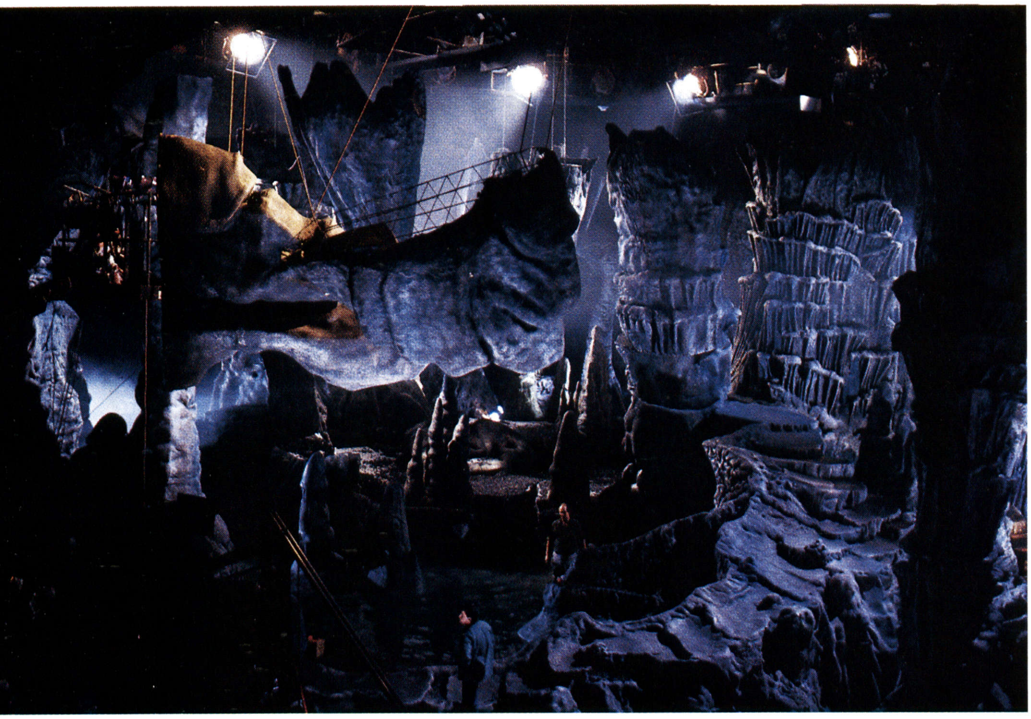
"There were plenty of times when the thing could have gone back to being a paperwork project and never been made," Hora concurs. "It would have been easy to do that, and hard to make a movie. But Barnaby made it work."

The story hinges on a group of rather inconsiderate aliens, called Algonians, who have learned that humans are





Left: *Double swirls announce the presence of the aliens' bomb ship.*
Below: *A series of actual frames, combining live footage and animation, of the juxtaportal, through which characters travel between the real world and the world inside a computer.*



Photos by Marsha Blackburn and Melissa Moseley

Above: *Cavern set showing lighting from above.* **Near right:** *Barnaby Jackson with the film's star, Timothy Ferrel.* **Far right:** *Hora on the set in a forest of C-stand trees.*

making technological leaps — terribly advanced computer chips, it turns out — that will soon enable them to travel to the stars. This doesn't jibe with the Algonians' plan to use our fertile planet Earth as a food source, so they plot to sabotage the factory making the super chips.

The adventures of our hero, a young boy named Jimmy, take us on a trip to a chip manufacturing facility, a cavernous underground hideout, and finally, in a climactic "ride-like" CGI sequence, into an actual computer chip. The physical environments were designed by Richard Sawyer and built on five stages at Hollywood's Raleigh Studios.

Regular readers of these pages will be familiar with the compositional considerations of the Imax and Omnimax formats; usually these considerations needn't be applied to set construction, because most Imax films seek out existing spectacle — the Grand Canyon, for example, or oil-well fires. After some experimentation, a rule of thumb emerged with regard to the sets: Imax sets need to be about double the height of normal sets.

"The sets were really built almost to the top of the stage at Raleigh Studios," marvels Hora. "Our cave set was 40 feet high, and the lights were above that. The problem with having the lights 30 or 40 feet up is the falloff. By the time the light reaches the level of the action, it's not nearly so bright."

His solution was neutral graduates in the camera. "I tried it both ways, and I liked the one that darkened more strongly," he recalls. "[The neutral grads] don't really perceptibly darken unless you take them out and see [the image] raw. It's better to darken the upper part of the frame, because it's so high in the theater anyway, so aesthetically it's nice. The projection can help you too, because they can't possibly have even light — or focus — on that big of a screen."

In any motion picture featuring special effects, a convincing illusion depends to a certain extent on how well the seams between the effects and the rest of the material are blended. While accepting an Oscar for effects, Richard Edlund, ASC once specifically thanked the sound designers and editors for helping to "sell" his effects. No less important is the interaction between effects lighting and the light in the "real world," commonly referred to as interactive lighting. In a format with the sharpness and depth of Imax — there's nowhere to hide — interactive lighting was crucial.

"That was why the live action and the effects had to happen together," says Jackson. "We had complicated interactive lighting to support the animation. At the time, nobody was quite sure what the animation would look like. All these aliens were interacting with what would become visual effects, which didn't exist yet.

"The duration of our effects shots was extra long, as well. In a regular feature, you can cut to a three-second effect. And you can hang on the actor, and have them become wide-eyed, and

Another view of the cavern, where our hero first learns of the aliens' plans to take over Earth as a food source.

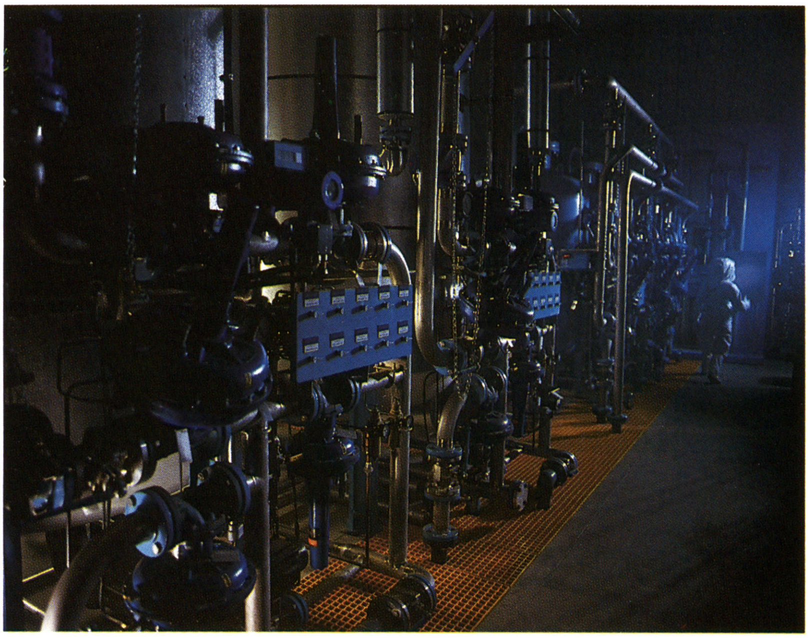
then cut to the effect and then cut back. But in Imax you can't do that — you have to be careful about allowing the audience to understand where they are. So our effects shots would last ten or fifteen seconds — you can't chop it up."

The longer shots made convincing interactive lighting even more crucial to the success of the illusions. The initial reveal of the massive cavern set provides a good example. "The camera is physically locked down on most of the plate shots," says Anderson. "Hidden up in the ceiling we would have 4Ks and 2K Xenon lights, and we had flicker mylars for effects. We also had old fair-type tins which were used for drying glossy prints back in the Fifties. These are big chrome mirrors from my collection, and they bend, so you can focus and de-focus them. We set highlights along the various areas, so a lighting technician could pan from one to the other to the next, driving the beams of light down, giving us an impression of motion. Down in the water, Marty Bresin, our physical effects person, had air mortars, and around that we had rings of huge flashbulbs that had been dipped in different colors.

"As Jimmy is running up, washes of light bathe the set, followed by a physical-effects eruption which is illuminated from within by the flashbulbs. All interactive lighting was built into the set, and choreographed to land at the water just before the eruption. Because of the scale of the sets, and the incredible detail, it's not something that you'd want to do in post — it would look phony on the large screen. The key was to create real interaction everywhere, to create a connection between the physical gags, the water and steam lines, the air mortars, the lighting gags, et cetera."

Like many of his cohorts on the film, Anderson was sailing uncharted waters. Special effects are rare in the Imax format, and the reasons are quite obvious. The support systems and expert vendors that have developed over the years for smaller formats do not exist for Imax. The tried and true method of shooting effects plates on a larger format to compensate for generational loss of quality is ruled out — there is no larger format. Despite these "minor difficulties," the completed film included more than 40 effects shots, many of them on the screen for much longer than the usual three or four seconds.

According to Anderson, almost every known effects technique found an application. Even



A view of the sub-Fab, the labyrinth beneath the computer chip factory (the Fab) the evil Algonians are trying to sabotage -- note alien escaping into background.

the conventional methods had to be adapted and improved due to the Imax format. "In terms of effects, this show broke two traditions," Anderson states. "One, it took to the large-screen format opticals that are beautiful. There's also a second thing, something that I've never had the opportunity to do before, and I've been doing this for twenty years: We had Imagica and Chris Reyna do two of every optical. In each case, there is a compete second optical in the vault, so you never have to go to the dupe optical. This show will get wide enough distribution that release prints [will be struck] off dupe negatives for most of the film. But there will be an original set of opticals used for release printing, so they'll be actually holding the same generation.

"We couldn't go to a bigger format than Imax," Anderson explains. "And to go down two generations would have been unacceptable. Barnaby insisted with the client, and it worked."

"The reason the modern films look so good is that everybody is doing 35mm and their effects are in VistaVision," Hora chimes in. "Suddenly we were up against a wall, because the movie was in the biggest thing anybody had, so the effects couldn't be in a bigger format."

"We took a lot of care, shooting on the finer grain stocks, and we're lucky that 5244, which is an intermediate stock, is here now," adds Jackson. "It wasn't here a year ago, at least not in 70mm. I think that the style of the effects partially alleviated the problem. We didn't do bluescreen extractions. We didn't do the kind of effects that tend to be generationally problematic by their nature. Also, our effects were integral to our production. We were doing it all at the same time, on the same sets, and Peter would come in and add additional lighting. There were no communication problems between units, and no underexposed stock came in."

The production team also had the audacity to try some Steadicam scenes. Jackson decided that POVs of the aliens needed an extra visual twist to set them apart. The Imax Steadicam rig being put together by MacGillivray-Freeman was not yet available, so once again necessity begat invention.

"John has a great relationship with Moviecam," says Jackson, "and the opening sequence was shot in 35mm in a windowed area. We kept that same equipment and shot all the points of view in the alien world on 35mm with Steadicam. They were scanned into a computer, and modified and then output directly onto 15-perf from the computer. You can't really tell what it is when you see it in the theater. The 'alien-vision' does weird things — it's as if it warps and bulges."

Although that may sound straightforward, the random movements of the Steadicam are not exactly compatible with the perfect world of the computer. "We were replacing elements within the scene, and pasting images over them that were shot with a Steadicam," says Anderson. "This is just about impossible to do in the real world, let alone with this ultra-magnified image. So Habib Zargarpour at Mr. Film modeled the Steadicam mechanism in the software. [Steadicam operator] Dan Kneece would do the choreographed moves, and the footage was scanned and tracked. There was no field recording — instead, we measured a Steadicam arm, the body, the knuckle, and how the camera hinges. Then, by extrapolation, we made mathematical assumptions. This way we could reproduce believable Steadicam movement in the CGI aspect of the shot."

With every pixel of the images destined to be magnified to gargantuan proportions on a huge screen, there was no room for error. Cameras were steady-tested weekly, and lenses were re-calibrated and checked on a regular, ongoing basis. Since much of the work was being attempted for the first time, increasing unpredictability, the controllable aspects were double- and triple-checked. Every procedure was carefully thought-out in advance. As Anderson puts it, "Nothing was casual. It was very, very intense."

Tight tolerances were certainly the norm on the "juxtaportal" shots, where conceptual animation was often blended with other effects techniques. The

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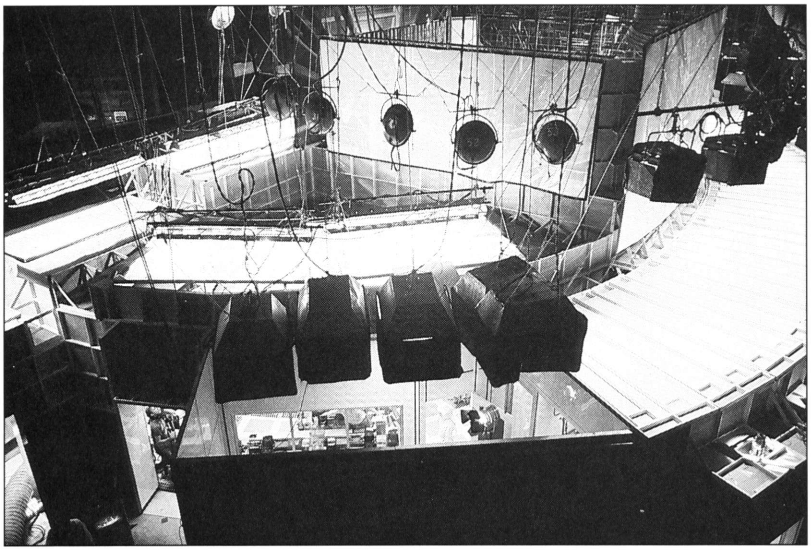
Right: ***Serious candlepower onstage at Raleigh Studios.*** **Below right:** ***Steadicam operator Dan Kneece (with kneepads) and supervisor of visual effects Peter Anderson.***



juxtaportal, in simple terms, is how the aliens pass from dimension to dimension — in other words, it's how they get around. Available Light handled the juxtaportals and traditional animation. For one particularly complex shot, another monster format was employed: VistaVision. A motion-control, seven-pass VistaVision element using the latest in matting techniques from Image G, the shot shows a computer chip passing through an animated "juxtaportal." The chip was photographed with a process developed by Image G that Anderson calls a "tangerine-ultraviolet-screen shot." There were beauty passes, matte passes — the works. Anderson found that if the shot was designed properly, a blow-up from VistaVision to 15-perf was not necessary — the shot could be successfully tracked one-to-one optically.

Thousands of seemingly minor complications had to be solved along the way. For example, the "Fab," or chip factory, was filled with working video monitors, and although there are established procedures to eliminate roll bars in conventional 35mm filmmaking, the Imax camera's fixed 155-degree shutter proved more intractable.

"The fixed 155-degree shutter means it's almost on the verge of non-synchable," says Anderson. "And the electronics on the camera are very strange on their cue signals. Again, the experts basically told us we couldn't do it. We had to reprocess all of the images, overscan all of the things, go through multiple cleanup systems, through some computer processors to catch the signals and then distribute them to the various video sources. Sometimes we'd have 12 videotape recorders all gen-locked together to these bastard signals with overscanned images. It was borderline insanity, but we did it anyway."

Since effects of this scale had never been attempted in the Imax format, the production team had to work with Imax Corporation over the course of months to enhance the steadiness of a camera until it would work for plate photography.

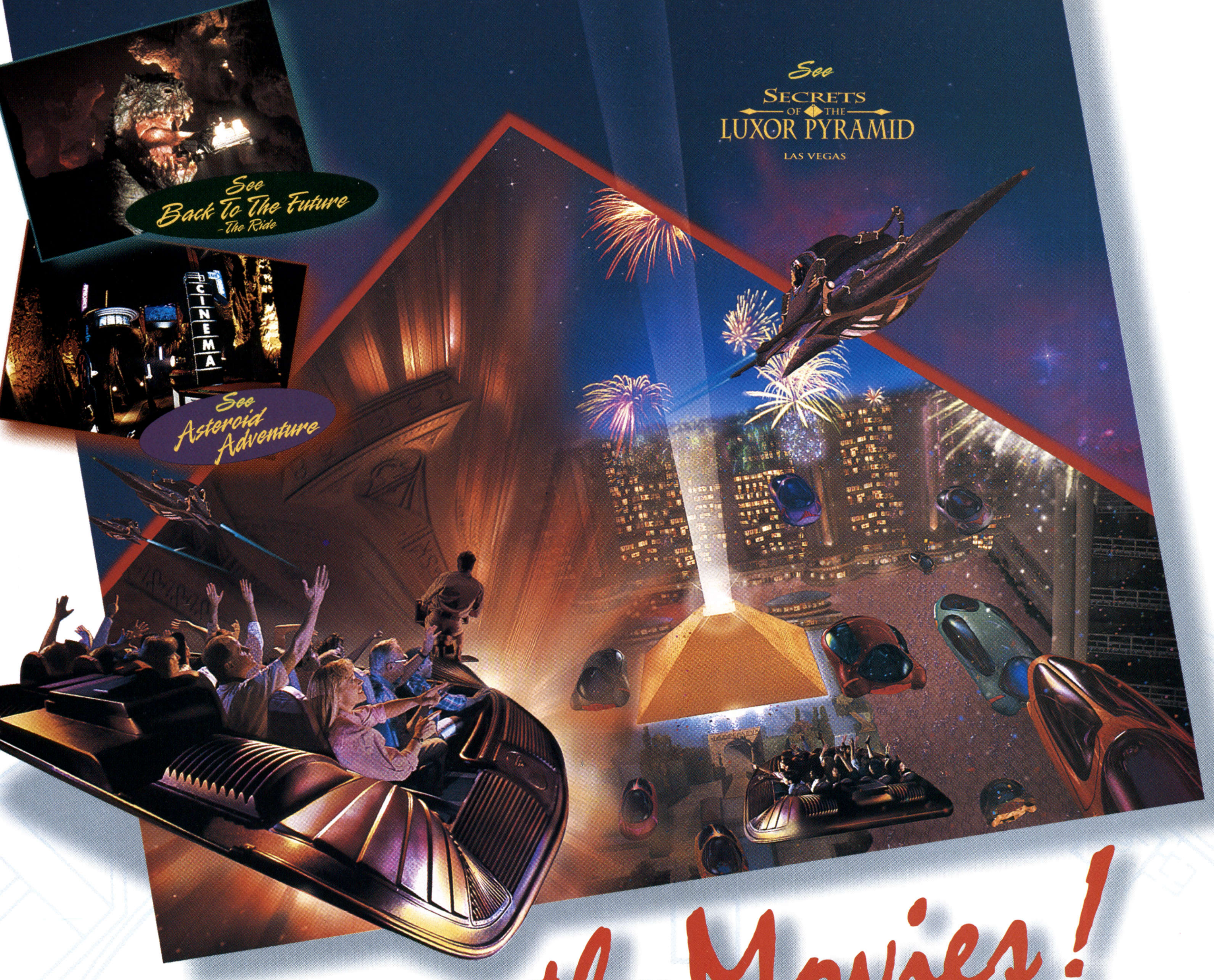
"There was one camera that we found within the entire Imax Corporation that was steady enough to use as a plate camera," says Anderson. "It was one of Geoff Williamson's original IW-5's. Imax gave us great support. There was a lot of communication before production; John's assistant and operator went up for training, and my assistant was trained locally. You have to have training before you're allowed to thread up the camera."

"Imax themselves actually did all the steadying," continues Jackson. "Peter insisted that they live up to his standards, so we shot film, looked at steady tests, rejected them, and eventually decided at a certain point that they were good enough and began photography. Imax should be complimented on their help on this project."

Jackson, whose resumé also includes participation in the development of Cinema Products' Showscan CP-65 camera, knows whereof he speaks in the world of large-format motion picture photography.

"Geoff Williamson, more than any other person, has facilitated large-format photography in the last 20 years. Some people have been critical over the years, but the bottom line is that he created cameras that worked. He got them out there and people made movies with them. Marty Mueller now has a great camera, and to a certain extent there's engineering supremacy in that camera, but there were many hundreds of thousands of feet shot on Geoff's cameras, and that's really what's important."

The big Imax cameras have long been a source of fascination for cinematographers; Hora is no exception. "Each of Imax's cameras has a log with a



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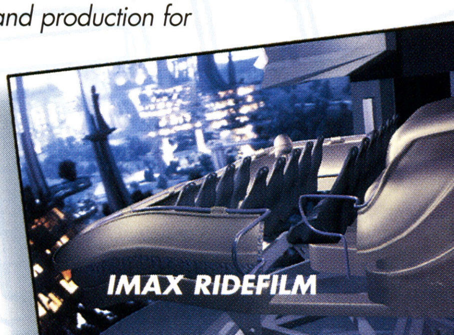
IMAX RIDEFILM

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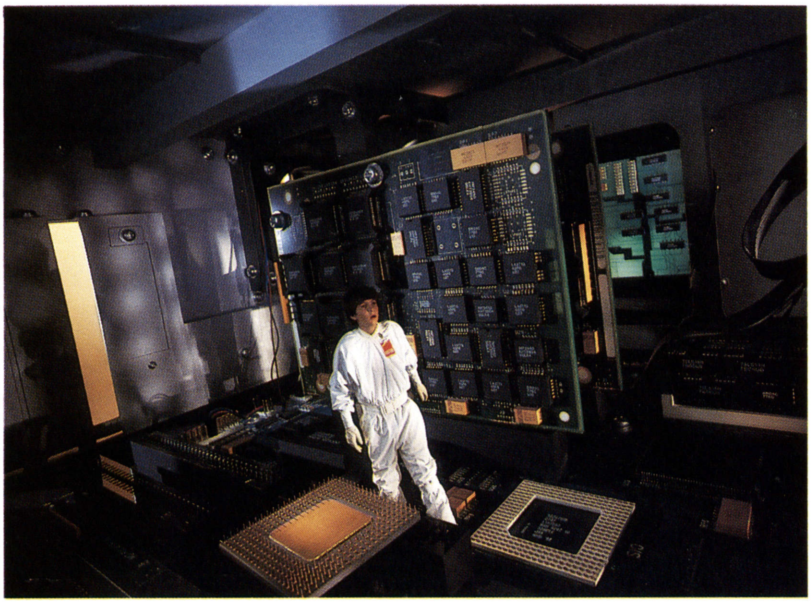
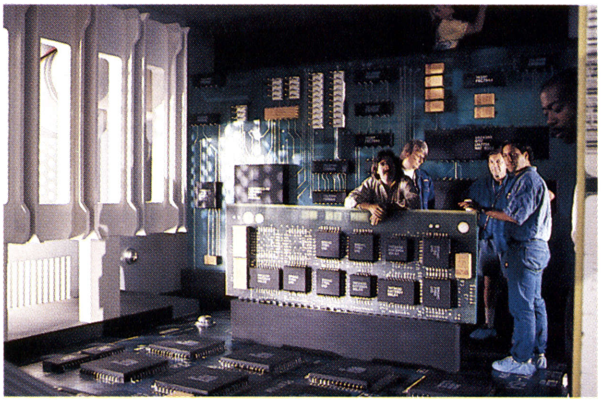
Right: ***Actor Ferrel on the set of the computer chip.*** **Below right, left to right:** ***Production designer Richard Sawyer, Hora, gaffer Foster Denker, and Jackson.***





metal cover, with a list of everything that's happened to that camera since the day it left the factory — each day's use, and every time it was repaired, tested, and whatever went wrong with it. If they had trouble with the video tap, or it made a noise, or whatever, the assistants have to log it in," says Hora. "I looked at these logs, and on every film that they'd done before, they'd apparently gotten roughly two shots per day. We were pumping magazines through — because we were shooting sound, among other things — at the regular rate. We were reloading four times an hour. Imax never had that amount of footage go through their cameras without a thorough check at the factory. It was a new experience for them."

"A thousand feet of film only lasts three minutes," Jackson laments. "You go through all this work, setting up a complicated camera move, on a big set, with lighting changes, and when the actors finally get it right it's time to reload."

"And it's not a real quick reload," Hora adds. "You have to clean the movement every time, and then every 15,000 feet you take half the camera apart."

Lenses also require more than the usual amount of consideration. "There's not much depth of field," Hora confirms. "The lenses are practically long lenses because of the size of the format. To get the focus to carry at all, you have to be really around a 5.6. The focus is sort of selective. Hopefully, it always goes to where you're interested. You can't just carry three people in a group the way you normally would."

"I think we all felt that if our action was in focus, it would be just like any other movie — it would be fine," Jackson explains. "Thanks to operator Bill Asman and first assistant cameraman Norm Cattell, I think we proved that to be true. One of the most effective things about Imax is that all that peripheral material does give the audience the feeling of being there, even if it's out of focus."

Still, minimum depth of field required plenty of footcandles. A cinematographer familiar with the days of ASA 8 and arc-filled movie sets of the Thirties and Forties who happened to stroll onto a stage at Raleigh might think himself momentarily transported back in time.

"It was like old-style Hollywood," chuckles Jackson. "On the factory set, the lighting was so bright that we had to turn off the lights between takes to let the actors cool off. We had five air-conditioning units with vents directly over the actors."

"The makeup was blistering," swears Hora.

According to Hora, one of the most difficult aspects of the shoot was not flame-broiling the talent, but rather finding the perfect location. "The sponsor, Intel, had originally assumed that we could shoot in their factory, where a mistake can affect their production," he says. "It's a 'clean' room, where you get washed and vacuumed and sealed in a suit, and then if you have to get a roll of camera tape, it's a 30-minute process. So we finally decided to build a set. But underneath the factory they have what they call a sub-Fab — a universe of pipes that goes on for square miles. Manufacturing chips requires a supply of certain chemicals and super-purified water. I said, 'What happens when a light falls and a pipe breaks?'

"So we thought it would be easier to find some pipes in Los Angeles and make our own sub-fab. They looked for months and they couldn't find anything that looked like this high-tech underneath-world. We went to every closed factory and facility in L.A., and every one looked old and low-tech. They finally found

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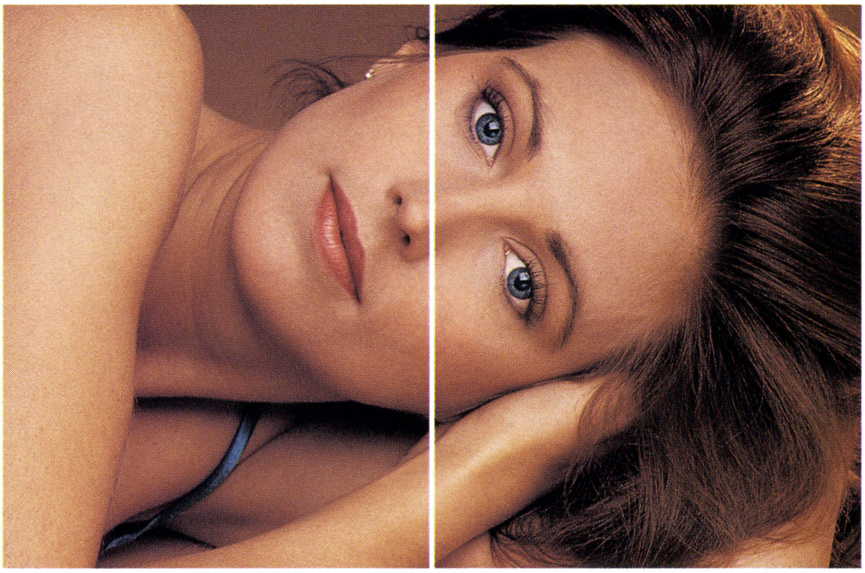

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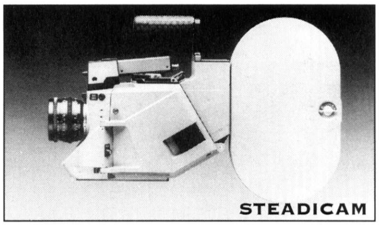

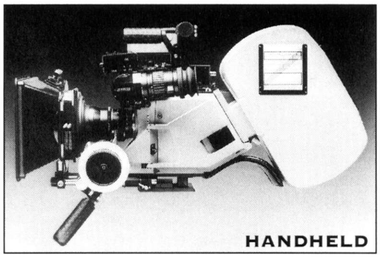

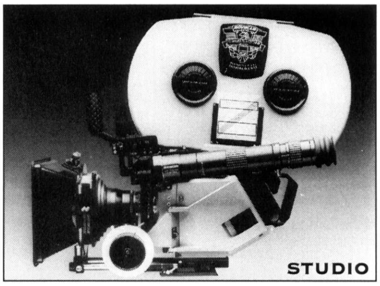

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what we needed at Edison, a state-of-the-art place where they process water."

The pipe room they found was tiny, however, compared to the acres of plumbing at Intel, and the scenes called for chases, effects and action in the cramped room. Set pieces were built, but the key was a set of translights Jackson and Richard Sawyer made from some 8 X 10 photographs taken at the Intel facility.

"When you see that underground pipe world," says Hora, "part of it is really Intel, part of it's Edison, and part of it's prop set pieces of several types that we created. We had to run back and forth over a 20-foot length for four days and make it look different each time."

Anderson emphasizes that the daunting project could not have been successfully undertaken anywhere else in the world. "This film was made in Hollywood," he states. "We took advantage of all the technology and experience that Hollywood can deliver, whether it be Dick Clark Executive producing, or sets, lighting, crews, translights, and equipment. Chapman, Fisher, Mole-Richardson — you name any house, it's in this film. Dream Quest, Image G, Metrolight Studios, Imagica, the Metrocolor guys at CFI, David Keighley at 70mm Inc. — we took advantage of the best of the best."

"That's very unusual for an Imax film," Jackson reminds. "Most Imax films have been 'five guys with a camera, let's go find a natural wonder.' This was a first time where it was like a 'film.' There was a narrative script with dialogue and a feature-style schedule. We were on soundstages. It was SAG, DGA, IA."

"Truckloads of stuff would come down from the Disney grip department," Anderson says. "Lights that were designed and manufactured this year by Mole-Richardson were trucked over. Hollywood Rentals? We took half of what they had. At the same time, we were using elevators that had been designed to carry Technicolor cameras for *Mary Poppins*. We used the *big* equipment. At Raleigh we used every available piece of lighting and cable. The sets — as well as the people who built the foam caves, and the technicians who wired everything — were tops. It essentially took two companies to generate the video that appears in the film on monitors. We had people who were taking representations of what we wanted on video monitors and producing that in their computers. All the makeup and the prosthetics people (led by Tony Gardner) were the best in the business. Everybody involved in this film was part of the tradition of cinematic experience. That could only happen in Hollywood."

Looking back, the trio of filmmakers feels that their lack of narrative Imax experience was a boon, in that they didn't know what was impossible. "I don't have a long history of directing films," Jackson admits. "I knew I wanted to have the camera move all the time — in every shot. I think I drove them a little bit crazy insisting on that.

"When you take a look at the film, even if it's not a complicated crane shot, you oftentimes have a little move," says Anderson. "Barnaby asked that the sets be designed as a total vista. You could shoot any direction, and you couldn't possibly shoot off the set — unless you aimed straight up in the lights."

Jackson uses the term "tunneling" to describe his dynamic shooting style. "Imax survives on masters," he explains. "But I think it's just terrible to be static. I wanted to be driving the crane into the set to find the cut point. But you can't put dolly track down because you'll see it. You can't dolly in — forget it. And you can't do tracking shots because in many cases you're strobing, again because of the screen size.

"If you tunnel, however, you get an effect that's similar to fabricated motion blur. The combination of Richard Sawyer's huge sets, with relatively wide lenses, made tunneling work."

A former camera assistant with years of experience in Showscan, Jackson knew what to look for in a lens. "With the Showscan system I had tested all of the wide-format lenses, and the best lens of the group of lenses in the Imax [realm] was the Hasselblad 50mm. There were two lenses that were designed to go to the moon — the 50 and the 110 — and they are vastly superior. We shot 90 percent of the movie with the 50mm."

"I'm lucky because I went to 'film school' at Showscan," Jackson reflects. "In a way, that was a very traditional style of filmmaking — we were using Mitchells that were built in the Forties. We couldn't do the new hip optical processes in Showscan because you'd see it. So we were always trying to figure out ways to do effects — and usually those effect were old-style, photographic processes. The photographic aspect of Showscan gave me an appreciation for the large formats, and the format forces you to look back and see how other people succeeded with it.

"I think that's part of what's exciting about large-format filmmaking. It's moving into the future at a different pace than some of the modern technology — it seems to be more resistant to trends. When something hip is on MTV, everyone is immediately doing it. It doesn't happen that way in the large formats."

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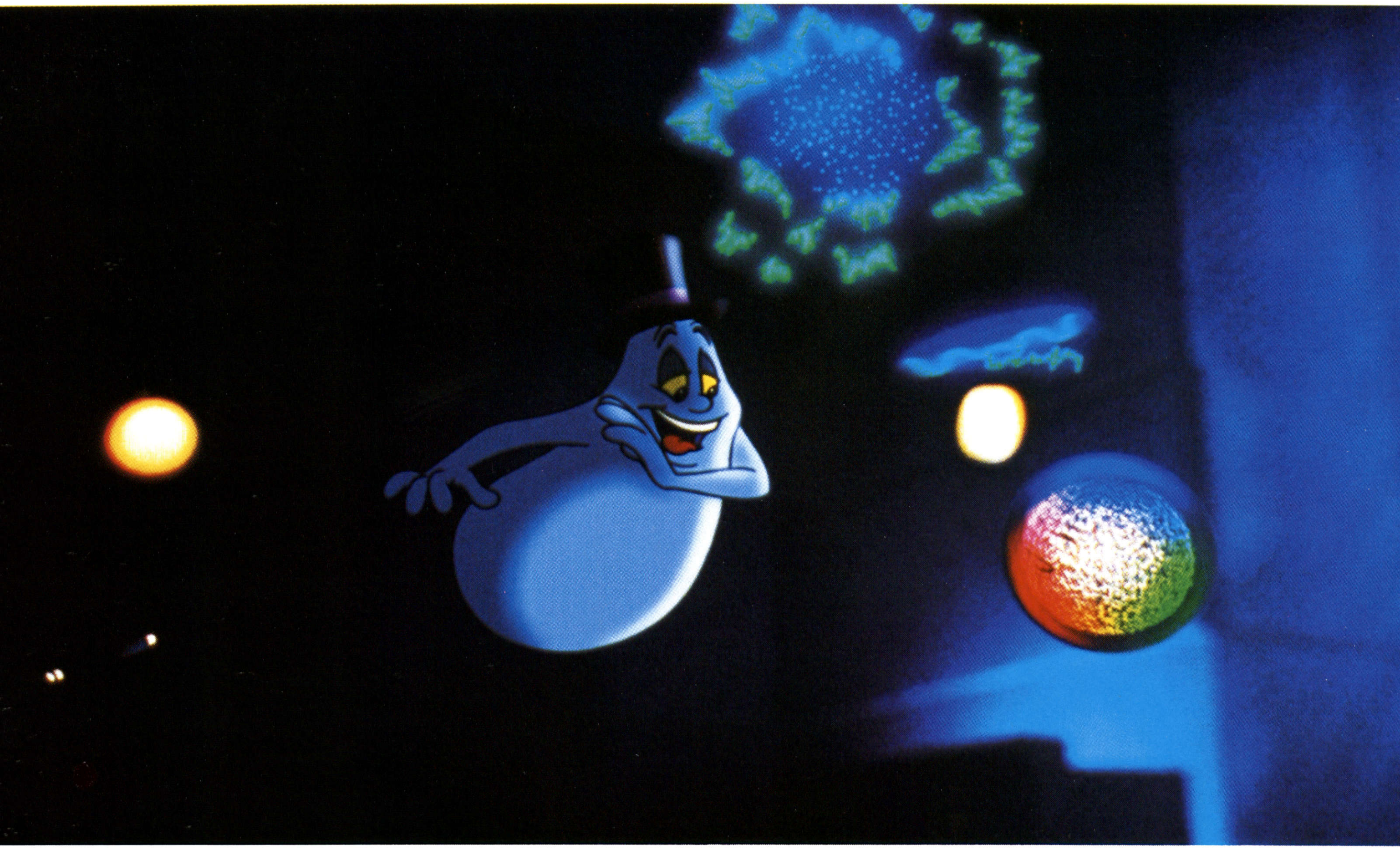


Sony Wonder Brings Action to Education

Multitude of formats brought together to introduce technology to kids.

by Jean Turner

Aboard the current wave that carries us into the future, there is an insistence that entertainment should be more than frivolous, offering some degree of educational merit. Thus, we have coined the term "edutainment," and many new formats are seeking to expand our minds while thrilling us with rides, movies, computer games, hands-on this and virtual reality that.

This trend continued recently in New York City, when the AT&T building was acquired by Sony Corporation. As a condition of the lease with the city, Sony was enjoined to provide a space to the public for educational purposes. Sony Wonder, as it is called, opened this summer with an eye to the 8- to 18-year-old crowd, and a new concept became reality. The theme is a laboratory where audiences participate in hands-on sound mixing, video camera work, robotics, and research — learning to use modern tools by doing.

As an introduction to the various labs, a pre-show was designed by Edwin Schlossberg (ESI, Inc.), produced by Dream Quest of Simi Valley, California and directed, written and generally created by a diverse crew whose expertise combined Super 35mm live-action cinematography, computer graphics, traditionally animated creations, transfer to high-definition laserdisc, and all the innovations that come to mind in the new world of edutainment. But perhaps the most exciting use of technology is the addition of two interactive segments: at predetermined points in the film, every member of the audience participates in moving the plot along.

According to producer Art Repola, "The movie we made was an 8.5-minute pre-show to get visitors interested and excited, warm them up about technology and open the doors to the hands-on activities. It's playing in a 72-seat theater in New York City at Sony Wonder, and no place else on the planet."

Actors Paul Zaloom and Eliza Schneider, from the television show *Beakman's World,* are featured in the live action, along with the comedian Sinbad. Animated characters in the show were created by Jon Fahrat of Dream Quest, and voices include those of Rae Dawn Chong and Tony Danza. "Thus, we have everything: computer graphics, live action, and the interactive parts of the movie," says Repola. "Hoyt Yeatman, Dream Quest's creative founder and director, was instrumental in helping ESI develop the interactivity. The film had to be made so that it hooked up to the interactivity. We developed it creatively, and we supplied the elements to fit the pieces of the puzzle together.

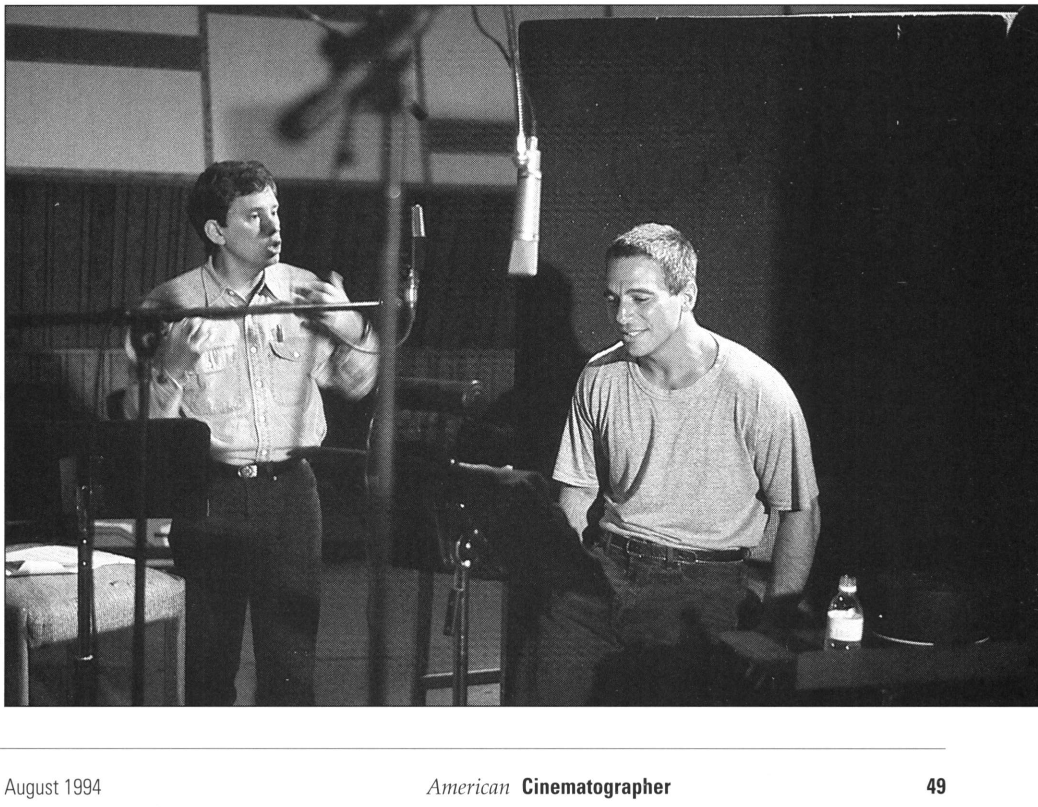
"[Edwin Schlossberg's] vision on interactivity is that in most cases, if the audience affects the outcome, you have winners and you have losers," Royola explains. "He wanted a cooperative educational experience instead. When the kids walk in, they don't even know they're going to see a movie. There's a giant video game on the screen, with 72 sprites numbered 1 to 72, and each seat has its own joystick. Somebody in seat 26 can move the little joystick around and see that the corresponding sprite is affected. Once they get the hang of that, the movie starts.

"There are two instances in the movie where they all have to work together as a team. In one case, they get blasted off course, out of the building, into space, and they're going to be lost forever unless they can ricochet off a satellite and get back to earth. They all have to use their joysticks to work together to accomplish the goal. There's a second instance of interactivity when Beakman burns out a circuit board on the computer, and they have to work together to solve a maze-like puzzle to correct the circuit."

Yeatman, who directed along with Jay Dubin, had much to do with the concept and also was part of the writing team (which also included Repola, Zaloom and Dubin). He says what made this project fun was that it was not a typical special-venue ride film. "You could tell a little bit more of a story, and it was eight minutes long, which gave us a little more time to do that. Also, it is something specifically for kids. We came up with the idea of generating animated characters, each representing a different technology, as a way of demonstrating what is done in a professional studio."

Four of the film's 8.5 minutes consist of computer-generated imagery. Supervising the computer graphics for Dream Quest was Frenchman Patrice Dinhut. His biggest challenge was organization. "When I started, the digital division was very new. I brought in a team of people who were more artistic than technical because we already had some folks in-house doing technical support. It was a difficult project because we could

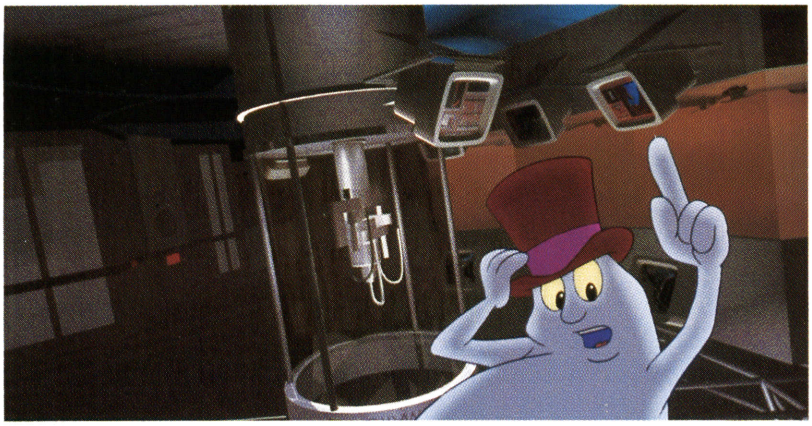
Sony Wonder

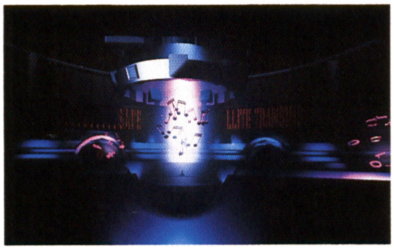


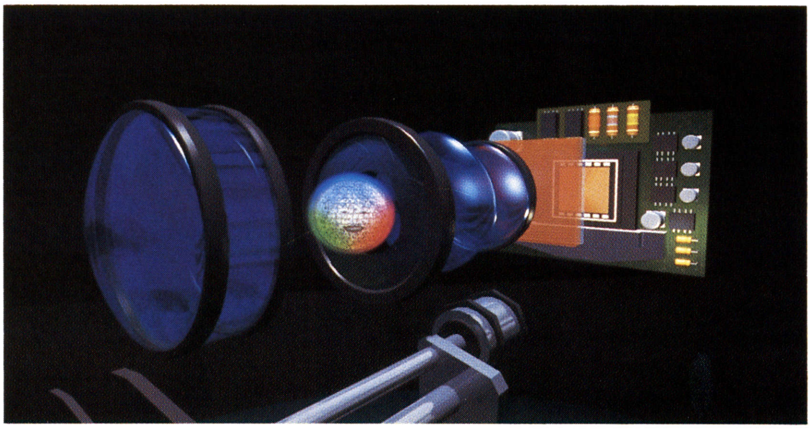
Opposite: ***An interaction between the characters "Bit," "Vid" and "Sonica" blends traditional animation and backlit animation.*** **This page, top:** ***The pre-show's cast includes (from left): Eliza Schneider and Paul Zaloom of the television show*** **Beakman's World,** ***along with comedian Sinbad.*** **This page, bottom:** ***Director Hoyt Yeatman encourages actor Tony Danza, who provided the voice of "Bit."***

Photos by ?, courtesy of Dream Quest Images

Counterclockwise from top: ***"Bit" hangs onto his hat as he takes viewers on their whirlwind adventure; an animated sound mixer; the character "Vid" in her element (notice the face of actress Rae Dawn Chong within the animated sphere).***







not assign one animator to each scene, yet everything had to flow. My challenge was to find where the animators were going to overlap."

Before the animation began, the computer graphics team had to first construct a reference version of the studios, which hadn't yet been built. "We were working with the same blueprints that the contractors were using to build the physical environment for the New York location. It was a sort of cyborg version," Yeatman recalls.

To relay the background information to the traditional animators, he explains, "we would output very simple wireframes with basic shading through a Minolta copy machine, which is also a digital process. It went right from the CG computer out to a 16-field color copy of the background." Each frame of the background was copied out and stripped up, then laid down in the light box so the animator could draw over the copy. From there another traditional method was employed: "We shot on an animation stand in black & white film, thus retaining the line quality. Later, the film would be scanned in our digital department and the result gave us very nice line characteristics. From there the film was digitally inked and painted," says Yeatman.

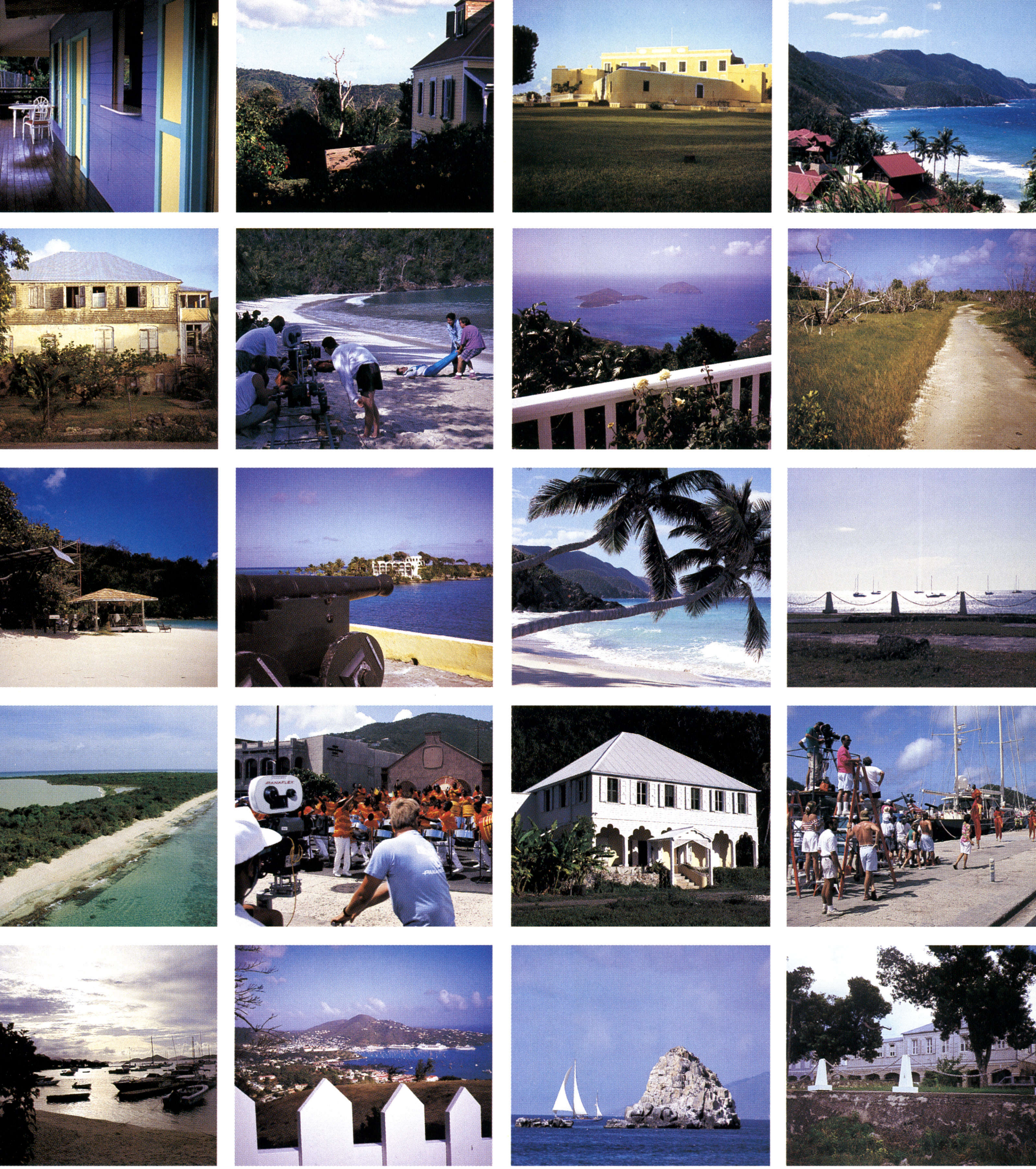
He had high praise for the digital process. "I think digital technology really takes a lot of the mundane work out of the process. You still have to go through traditional animation frame by frame, but the magic of that is that you're using true animators' drawings, pencil on paper. From that point on, the advance digital technology takes the laborious part of it — inking, painting, tracing and compositing — out of the system."

A character called "Vid" was traditionally animated, but eventually even it became a digital element; another character ("Sonica") was done with backlit animation, creating a rare combination of conflicting formats. "High-def output is not composed of symmetrical pixels, so you have a computer that's generating backgrounds in squares and you've got other stuff going to high-def that's not square," Yeatman explains.

Vid looks like a sphere of video snow as she guides the audience through the tour of the various labs. If you look closely, you can see that the snowy sphere's face is actually Chong's.

"Usually live action is shot first, the voices are recorded, and then the animators animate the characters," Yeatman says. "We had animated some sequences before Rae Dawn Chong recorded Vid's voice. She had to act to the cartoon character after the fact, which was backwards. Rae's character is 3-D, so we had to record just her face. She was in bluescreen (blue) makeup, in a head brace looking through a teleprompter at the camera. She had to be animated and yet not move her head — very hard to do — and at the same time, hit her lines. We fitted her with a miniature headset so she could hear the lines of Tony Danza, who had already been animated as the cartoon character Bit. She had to fit her lines between. She was looking through the teleprompter and seeing her lines at the same time, plus some of the pencil tests of the animation of her own character. After many takes she was able to get it quite well, but it was difficult."

The film was shot in Super 35mm at 24 frames per second, mostly for budgetary reasons. For editing, it was converted to NTSC using a 3/2



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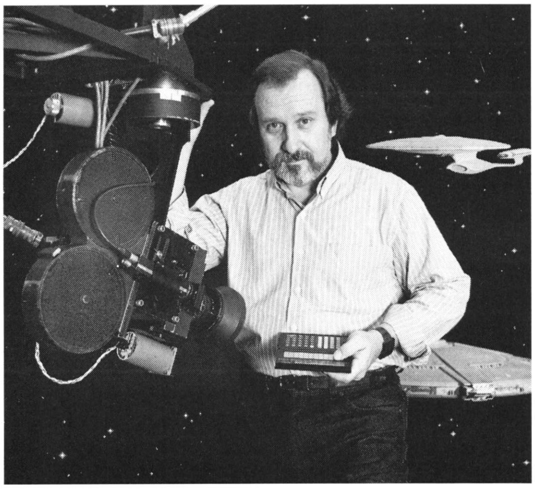

photo by Tim Stel at IMAGE G Stage during filming for Star Trek "T.N.G."

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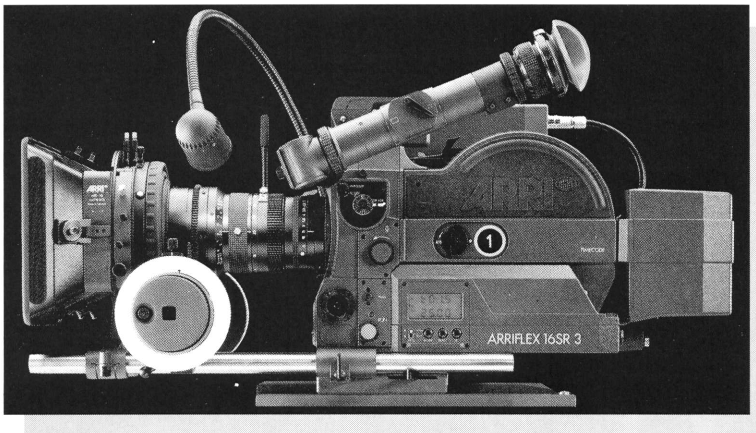

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pulldown process, leaving it at the NTSC frame rate of 29.97 fps. The HD components, however, were output at a true 30 fps. Accommodating all the components, plus inking, painting, drawing and live action, was quite a snarl. Says Yeatman, "We found that we had to have a mathematician/editor to help us through the whole thing." Jim May, currently of Sony Images, was that expert.

May somehow managed to retain his sanity throughout the "piecing together" process, in which the characters are placed in their correct frames. "Everything had to have a frame where it started and an absolute frame where it stopped," he says. "So when your final is running at 30 frames per second, you're taking interpolated frames and assigning an absolute frame number to them. It's not easy. We would pace our cut for a certain length but we really never knew how long the interactive would last. Its effect on the soundtrack and the pacing had to be figured in.

"Math was never my strong subject in school," May avers, "but I really used it on this show. We had to keep an absolute frame count for a good portion of the film so that we knew that at frame 9,223 a certain character began. I was new to the Avid editing system and the way it works, I was new to videotape — my background is film — and I got a real lesson in interlacing frames and jumping from 24 to 30, then to high-def.

"Working for Hoyt is almost like working for a professor. He just wants to make sure you know the project as well as he does, and in the end, that's a nice thing."

May describes a timeline contrived by Yeatman that stretched around three walls of a conference room, with each frame occupying less than a millimeter. With all the elements and each of the different mattes, it took about a week to design the timeline. And once changes were

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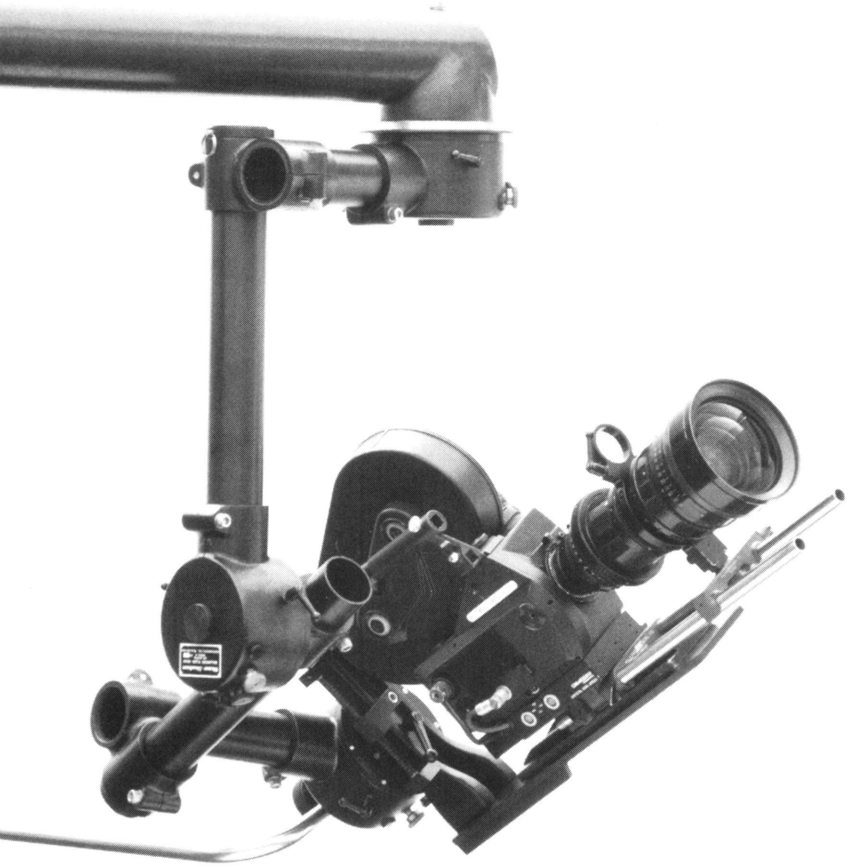

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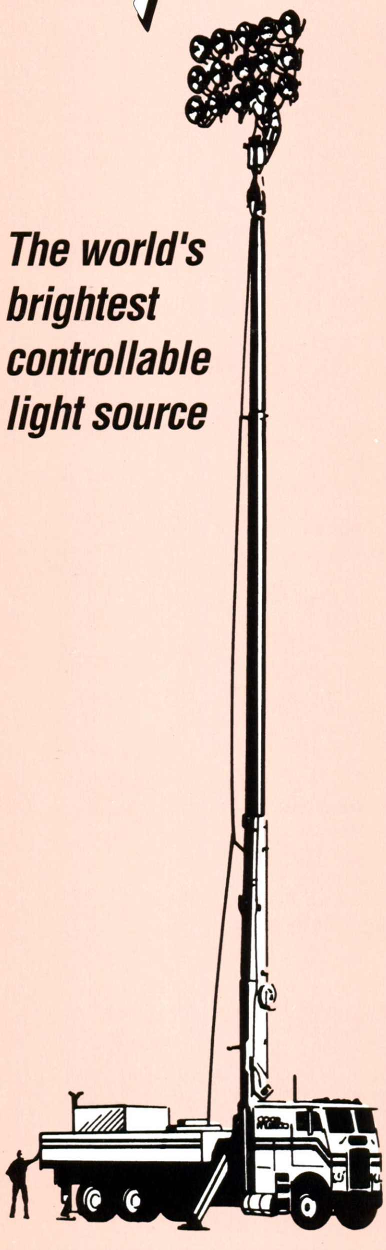

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made, of course, the whole line had to be addended. "It was pretty impressive," he enthused, "because it showed how many elements were going in and how many frames were being rendered and how many different frames had to be animated."

The computer graphics background animation was begun early on. "We cut together a real rough version using storyboards just to get overall length," says May. "We ran some dialogue and intercut those pieces. From there the CG people had a general idea of how long to make their wireframe backgrounds. Some of these CG scenes were 800 to 900 frames long and all at 24 fps. You couldn't really have one person work on the entire four-minute CG section. Each had to be animated in pieces. We had to hook those up together because the overall effect was to be one long shot traveling through the entire CG background.

"With traditional background effects," May explains, "you get a cut from the live-action cutting room. They have a plate that is shot at the same time as the rest of the action. They cut in the effects shot and give you a dupe of their cut, and you know how long the shot will be. This was different, obviously, because we were determining the length of the shots ourselves for both effects and live action.

"The point at which a new scene takes over and the previous one ends was sort of nebulous. To make it easier for the CG people, we would let them blend their wireframes together from one scene to the next. Then they'd come back and tell me, 'This is how long the transition is going to be.'"

When the edit began, it was with dialogue on 35mm mag track. Sections were chosen to be track-read, which means that the words of the dialogue are written out on a frame-by-frame exposure sheet for the animators. "Thus, the animator knows that on frame 10, for instance, the 'B' in 'bad' is starting," May explains. "Sound effects can be track-read, as well. Maybe there's a point at frame 21 where it reads, 'Sonica's barking like a dog here and the cymbal crash happens here,' so the animator knows at what point to animate the bark or the crash."

Once May had all the elements in hand, including the sound effects from EFX Studios, and the picture was cut to its 8.5-minute length, everything was assembled at the HD center on the Sony lot in Culver City. They created the one-inch HD master, which was sent to Japan for laserdisc pressing. In the finished film, at a predetermined time, the system switches over from high-definition laserdisc to real-time computer graphics for the length of the game, and then switches back.

May admits that all the new technology makes an editor's life easier, but also complicates it in other ways. The move is towards digital non-linear editing, "but for all us film guys who are still having to make that switch, we're sort of right in the middle. For me, at least, it was a challenge to juggle the 24-30 switch and from there go to tape and then to master tape," he says.

"It was a very ambitious project," says Yeatman. "I enjoyed it because we had an opportunity to develop characters and tell a story. Even though it isn't a ride film, we did take a subjective point of view to pull the audience into the story, to get them really involved."

"Dream Quest had the opportunity to develop the whole concept, and it was challenging — but we'd do it again in a New York minute," producer Repola concludes. "I can't wait to stand in the back of the theater and watch 72 kids discover those joysticks and start playing this movie!"

Interview: Doug Trumbull and Richard Yuricich, ASC

Special-venue pioneers discuss the past, present and future of "immersive entertainment."

by Bob Fisher and Marji Rhea

"I don't think of it as a ride any more. I just call it immersive entertainment. By that I mean experiencing a total sense of being inside the movie."

Chances are that if Douglas Trumbull had been born in Europe 500 years ago, he would have become a hyphenated Renaissance man: a sculptor-painter-poet. It's more difficult to categorize him today: writer-director-visual effects innovator-inventor-dreamer-daring entrepreneur.

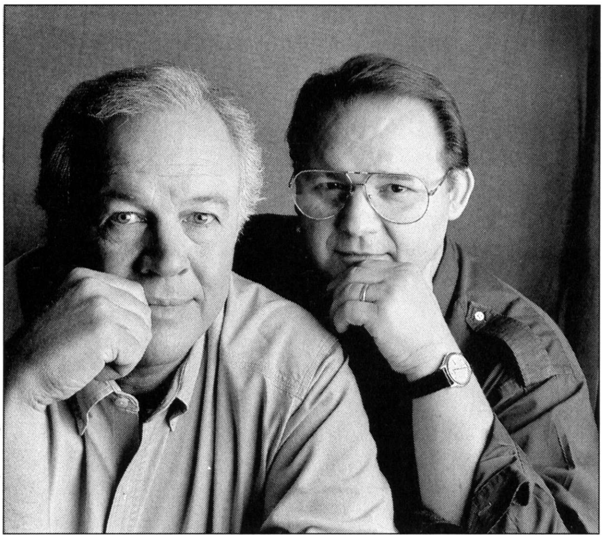
Photo by Douglas Kirkland

Special-venue visionaries: Trumbull (left) and Yuricich.

Trumbull started his movie career modestly enough, as a matte painter, but Stanley Kubrick quickly realized that Trumbull had something special to offer. In 1964, Kubrick made the 22-year-old Trumbull one of four visual effects supervisors for a movie he was developing, tentatively titled *Journey Beyond the Stars*. The project was eventually renamed *2001: A Space Odyssey;* with his creation of the now-famous Stargate sequence, Trumbull officially achieved the status of prodigy. His subsequent credits as visual effects supervisor include *The Andromeda Strain*, *Blade Runner*, *Star Trek — The Motion Picture* and *Close Encounters of the Third Kind*. Check the talent assembled for those films, and you have a start on defining the history of contemporary visual film effects.

After writing and directing 1971's *Silent Running*, Trumbull established Future General Corp. in conjunction with Paramount Pictures to invent a more expansive future for filmmaking and display. Trumbull is currently celebrating the 20th anniversary of both his first movie ride and the invention of the Showscan process at Future General. Along with longtime colleague Richard Yuricich, ASC, he eventually left Future General and founded EEG (Entertainment Effects Group), and in 1985, Trumbull became the first CEO of Showscan Film Corporation. Four years later, he left Showscan and moved to Lenox, Massachusetts, where he founded the Berkshire Motion Picture Corporation and its subsidiary, Berkshire Ridefilm Corp. (changed in 1992 to Trumbull Company, Inc. and Ridefilm Theaters Corp., respectively). It was there that Trumbull directed and produced *Back to the Future — The Ride*, the jewel in the crown of Universal Studios' Florida and Hollywood theme parks. TCI and RTC also designed, directed and produced films for three themed film attractions at an indoor urban entertainment center at the Luxor Las Vegas Hotel and Casino. TCI recently merged with Toronto-based Imax Corporation, and Trumbull was named vice-chairman of Imax and president and CEO of its new subsidiary, Ridefilm Corporaton.

Richard Yuricich, ASC has worked with Trumbull on projects such as *2001: A Space Odyssey*, *Silent Running*, *Close Encounters*, *Blade Runner*, *Star Trek — The Movie*, and *Brainstorm*. He recently played a key role in designing a revolutionary 3-D attraction, which is currently a work-in-progress. He is presently serving as visual effects director for a theatrical feature now in development.

Like Trumbull, whose father worked in special effects at several studios (he helped create the flying monkeys in *The Wizard of Oz*) before switching to aviation engineering, Yuricich has visual effects in the family: his brother Matthew, 20 years older, was "one of the best matte painters ever," who worked on *Ben Hur* and *The Day the Earth Stood Still*, among other films. When Yuricich was 14, a two-week visit to Los Angeles turned into a whole summer of exposure to the craft. He later returned to finish high school in Los Angeles; after graduation, he landed a job with an animation company and gained experience working with an optical printer and motion-control cameras. At about that time, he heard that Trumbull needed crew help on *2001*.

After *2001*, Yuricich became an assistant cameraman working on commercials, and later joined Trumbull at his Trumbull Film Effects in Canoga Park. "There were a lot of great people there," he says, "including John Dykstra, Wayne Smith and Bruce Logan, when Doug hired me. We did a lot of commercials for companies like Sears & Roebuck, and promos for ABC Television. I was working on commercials while Doug was directing visual effects for *The Andromeda Strain*. It was a very creative environment. I remember coming up with an idea for creating a rippling effect. We melted some plexiglass to put a ripple in it, and then we put it in front of the lens. We showed it to Doug, and he said, 'Great, now let's put a motor on it so it moves.'"

When Trumbull went off to direct *Silent Running*, Yuricich left to work as assistant cameraman on another film, but was soon back to work on visual effects for Trumbull's film. "We did 56 shots in 40 days," he recalls.

Trumbull originally studied to be an architect, and ended up as a technical illustrator. After graduation he worked for an ad agency and then for Graphic Films, which created a couple of films for the 1964 World's Fair. His background paintings for *To the Moon and Beyond* attracted the attention of Kubrick, who hired him while he was still developing visual ideas for *Journey Beyond the Stars*. Upon being hired, Trumbull spent two and a half years in London. "In the beginning, I really didn't know what I was doing. It was like film school for me."

In any case, his reputation after that film attracted the attention of the studios. Unfortunately, after finishing *Silent Running* in 1971, he ended up "in development hell," he says. "I went through a period of three years when I had development deals with almost every major studio for sizable films. Every one of them fell through for all the wrong reasons. I had a big project called *The Journey of the Oceanauts*. It was like *2001* underwater. It would have been a very spectacular adventure. We had it developed and scripted, and shot tests. Richard (Yuricich) and I were working on some incredible ideas. The producer (Arthur Jacobs) died, and the project got tied up in his estate. I had a picture called *Pyramid* at MGM, which was fully developed and scripted. We were starting to cast, and location scouting was underway, when Kirk Kerkorian cut back MGM's movie business to build a casino in Las Vegas. I also had a picture at Warner Bros. called *The Ride*. It was about the social impact of a new, advanced form of entertainment. Management changed, and the new people weren't interested."

After that, Trumbull decide to spend his time on other things, and organized Future General Corporation, a subsidiary of Paramount Pictures, with the goal of finding a newer, better format, one that "any director could direct, any cinematographer could shoot, any projectionist could project, and any editor could cut without having to physically change the theaters.

"During the first nine months of that business, we experimented with every known film format," he says. "We even shot experimental 3-D films. We were looking at those films with different types of projectors and screens. We experimented with dual projection, so there would be no black interval." However, their efforts proved disappointing. "There was nothing special happening," he says. "We didn't know what we were hunting for, but we knew we weren't finding it. That's when we decided to alter the frame rate," a technique that Kubrick had experimented with on *2001*.

"On *2001*, Stanley Kubrick was shooting effects at more than a 200 to 1 ratio," Trumbull says. "He rented a high-speed viewing machine used for checking dailies. You could run film through it at 200 frames a second. The viewer was a prism. I noticed that even on this little screen, there was a liquid realism at high frame rates. You could look at film of an abstract starfield, and see magic happening."

Following this decision, Yuricich shot several tests, one a seven-and-a-half minute thrill film shot at the Grand Canyon at 72 frames a second. "We bought the nose cone of an old 1938 Lockheed airplane, and mounted a 65mm rack-over camera in it." For another test film, the team blew the seals off of a Panavision crystal sync motor, for which Trumbull's father built a gear box and rewired the motor to operate with sync sound at 60 frames a second.

"One of the things we envisioned," says Trumbull, "was enlarging the screen and going wall to wall, which most theaters didn't do. That alone tremendously enhanced the vividness of the picture, because you could increase the intensity of light put through the projector. We wanted to get 30 to 35 foot-lamberts on the screen. We shot tests at 24, 36, 48, 60 and 72 frames per second. We used one projector at 24 frames, and another worked at all of the other frame rates." The team set up a laboratory at a school in Pomona to test their formats, and brought in neurophysiologists to test about 60 subjects (students paid $5.00), who were hooked up to electroencephalograph, electrocardiogram, electromiogram and skin response devices, and then put in front of a screen. "There was a remarkable difference in response between 24 frames per second and 72," says Trumbull. "You could see that at 60 frames [the subjects' responses were] very high on the curve. At 72, it got slightly higher, but not a lot. There was an advantage to backing off to 60 frames, because then it became compatible with high-definition TV. At 60 frames per second, we also resolved all the

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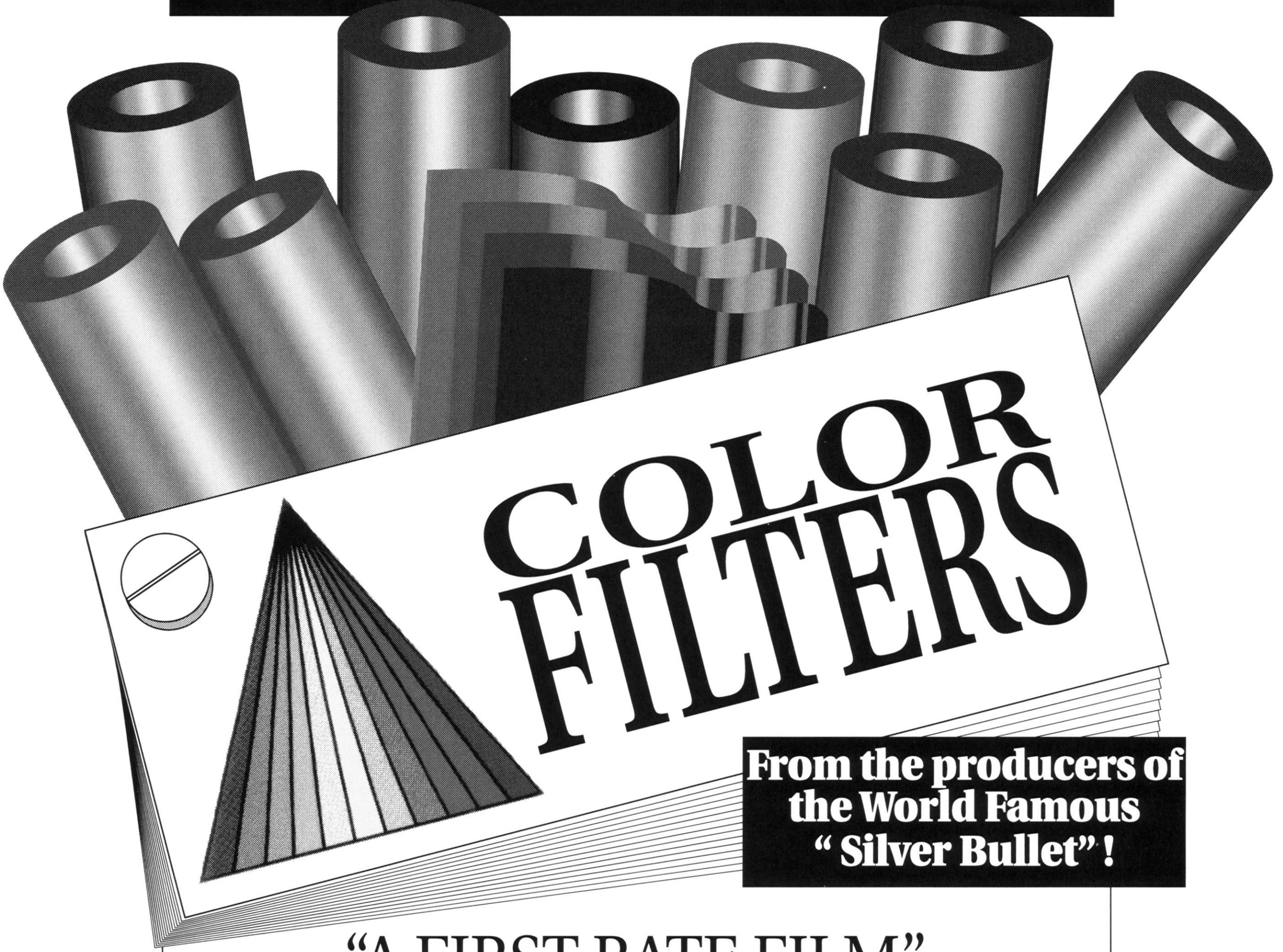

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flicker threshold issues, and got really vivid color saturation and contrast."

Among other Future General projects was a simulation ride for a company called Anchor Conveyor — a 12-passenger simulator capsule with three hydraulic rams — and an an interactive 3-D color video game. Their most promising moment came when Paramount's top management viewed the first Showscan demo film at the Mann Theater on a very large screen. "After one demonstration," recalls Trumbull, "the top studio executive said, 'Gentlemen, if we don't make a feature film in this process, we are fools.'" Once again, however, the plans were stalled by changes in management.

During this time, George Lucas asked Trumbull to handle visual effects for *Star Wars,* but Trumbull recommended John Dykstra for the job. "I wasn't interested in creating visual effects for other people's films any more," he says. He did end up working with Steven Spielberg a few months later, however; Spielberg's *Close Encounters* project "tied in neatly with the work that Richard and I had done with Showscan. I also liked the idea of working with Steven; he was just coming off *Jaws,* and I thought it would be an interesting experience to watch this guy in action."

He and Yuricich, who again served as visual effects cameraman on the film, decided to create effects in 65mm format, and bought nine 65mm cameras and modified them for motion-control work. "Almost everyone else was oriented toward VistaVision," recalls Yuricich, "but we came from the Stanley Kubrick school and believed in getting the largest possible image area. You have around 38 percent more area on a 65mm frame (compared to VistaVision), and it's compatible with wide-screen 35mm anamorphic projection. MGM also had a great 65mm lab."

Future General's next step in its search for future film formats was Yuricich's film test *Night of the Dreams,* an exploration of a theatrical use for the Showscan process. Afterwards, Trumbull was asked to construct a script for *Brainstorm,* for which the studio was considering a limited road-show release. Although unwilling to risk an entire theatrical budget on a new format, they were willing to use it in key parts of the film. "The idea was to use Showscan at moments of heightened drama," says Trumbull, "where suddenly the screen gets bigger, the images become more vivid, and we go to stereo sound. Then, we cut back to a normal 1.66:1 aspect ratio in 35mm format with mono sound."

"We were getting ready to shoot, and I thought my dream was finally coming true," he recalls. "Then Paramount asked us to take over the effects work for *Star Trek — The Motion Picture.* They had almost finished principal photography, but effects were running very late, and it looked like they weren't going to make their delivery date for the holiday season. "I wasn't anxious to do this project. I felt like I was moving backwards. There were more than 700 effects shots needed for *Star Trek.* That was as many as *Close Encounters* and *Star Wars* combined, and there were only seven months left until the release date. Finally, I said, 'Richard (Yuricich) and I will do it together, but the deal is that afterwards we either produce *Brainstorm* as agreed at Paramount, or I am free to take the project to another studio.' They also agreed to sell us the 65mm equipment as partial payment for the work done on *Close Encounters* and *Star Trek.*" After *Star Trek,* Trumbull and Yuricich obtained all the assets of Future General and opened EEG with this new equipment.

In the end, Trumbull showed the script to "just about every studio" before getting a deal at MGM, but the studio didn't want to do it in the new format, afraid of the expense to exhibitors — who'd have to get new projectors, bigger screens, and new sound heads and amplifiers. "Some of them might have done that if we could tell them there would be other movies coming in Showscan format," says Trumbull. "I never broke through that Catch 22."

As it was, EEG shot *Brainstorm* at 24 frames per second with plans to cut from 35mm to 70mm prints, mono to stereo sound, and from 1.66:1 to a 2.35:1 aspect ratio on certain scenes.

The company then went on to work on special effects for *Blade Runner,* and then produced one of the first simulator rides, *Tour of the Universe,* in Showscan format for Interactive Entertainment in Toronto.

At that time, EEG and Showscan were under one roof. A partnership with Richard Edlund, ASC established Boss Films at the EEG facility, freeing Trumbull to concentrate on organizing and running what was then called Showscan Entertainment. Yuricich stayed at EEG and BOSS for a transitional period, while they were working on *Ghostbusters* and *2010.*

Still looking for a feature-length film vehicle for the Showscan format, the company at first found hope in Henry Plitt, whose Plitt chain owned about 600 theaters. Plitt bought 80% of Showscan's assets, but three months later sold his entire chain to Cineplex Odeon. "That's when I decided to leave Hollywood and move to the Berkshires, in Western Massachusetts," says Trumbull.

The Trumbull Company converted an old mill into a studio and began concentrating on special-venue projects as vehicles for Showscan — including world fairs, expositions, theme parks, museums and similar leisure destinations. There they produced *Leonardo's Dream* for Showscan and the Italian Government and *Back to the Future — The Ride.*

Also developed during this time was the Showscan CP-

65 camera, made by Cinema Products, which ultimately earned a scientific and technical Academy Award.

After directing *Leonardo's Dream* with Giuseppe Rotunno ASC, AIC, Trumbull changed his mind about Showscan being the future format of theatrical films. "It was the first time I had a chance to make a period theatrical film with full makeup, wardrobe, sets, props, beautiful lighting, camera moves, etcetera," he recalls. "After that film was completed, I drew a very distinct conclusion that the Showscan process is too vivid and life-like for a traditional fiction film. It becomes invasive. I decided that for conventional movies, it's best to stay with 24 frames per second. It keeps the image under the proscenium arch. That's important, because most of the audience wants to be non-participating voyeurs."

In October of 1992, after finishing *Back to the Future — The Ride*, the Trumbull Company was approached by Circus Circus Enterprises, which ran the Showscan motion simulator in the Excalibur Hotel in Las Vegas and had new plans for an entertainment complex and a 30-story, pyramid-shaped hotel. This new complex would have not one but three big attractions: immersive films representing the past, present and future and incorporating into the story the hotel's pyramid shape.

"We decided to link all of the stories in a common theme because the total experience is greater than the individual parts," explains Trumbull. "It is an adventure story, broken into three episodes, and each is handled in a completely different style, but using the same cast. It's an unusual idea, but I felt that one of the deficiencies of special-venue theaters is that you don't have sufficient time to develop characters or drama or empathy — the kind of feeling you would get in a feature film. By having the same characters in all three episodes, we added a layer of

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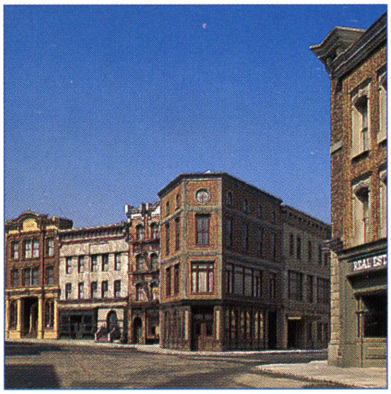
3	154′	80′	27′2″	12,320
4	154′	69′	27′10″	10,626
5	139′	64′	23′4″	8,896
6	139′	63′	19′10″	8,757
12	199′	146′	49′2″	29,054
12W-Fire	99′	68′	28′2″	6,732
16	144′	80′	28′8″	11,520
17	144′	70′	28′10″	10,080
18	144′	74′	29′1″	10,656
19	144′	74′	27′10″	9,934
20	144′	74′	27′1″	10,656
22	157′	74′	27′0″	11,618
23	157′	76′	28′1″	11,932
24	157′	112′	33′4″	17,584
25	157′	112′	33′4″	17,584
27	199′	99′	39′10″	19,701
28	142′	98′	43′11″	13,916
29	141′	97′	30′0″	13,677
30	141′	88	30′0″	12,408
31	141′	97′	30′0″	13,677
32	141′	89′	30′0″	12,549
33	99′	69′	25′0″	6,831
34	99′	69′	25′0″	6,831
35	99′	69′	25′0″	6,831
36	99′	69′	24′11″	6,831
37	140′	100′	30′0″	14,000
41	140′	102′	30′1″	14,280
42	140′	102′	30′0″	14,280
43	140′	102′	30′3″	14,280
44	140′	102′	30′0″	14,280
747	139′	59′	21′2″	8,201
TANK		25′Dia.	15′6″	491



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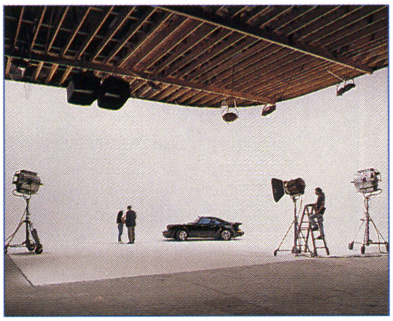

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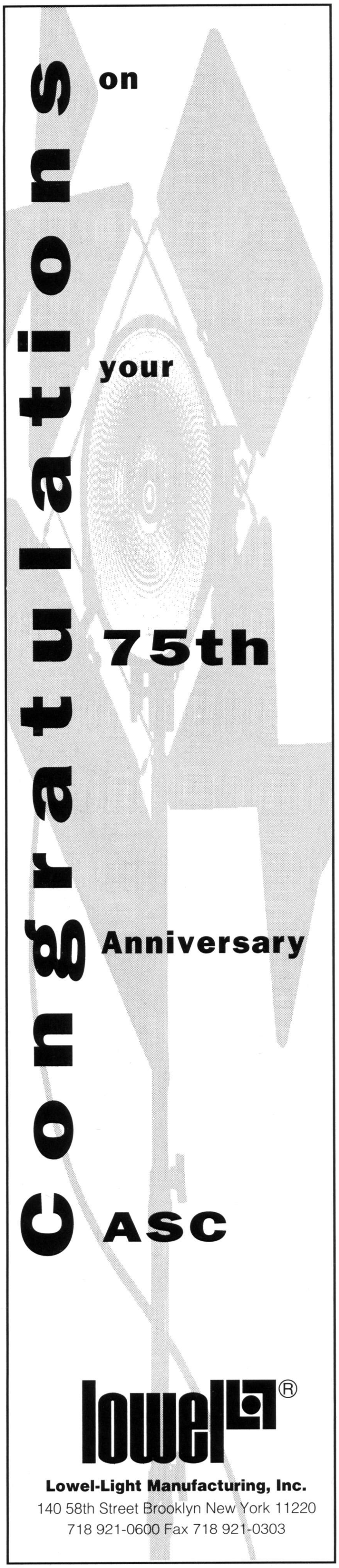

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"One of my ideas was to design a simulation theater, where we would take the audience on an experiential journey during an archeological expedition. I felt we could make it a better ride than *Back to the Future* by making it smaller," says Trumbull. "When we were producing *Back to the Future*, we used a much smaller theater to look at dailies and program the ride. That allowed us to project a much brighter image on the screen, and the difference in impact was astounding. The other advantage of having a smaller theater is that over the long-term, if you are going to bring movie rides into the mass culture, they have to fit into existing structures at retail shopping centers without requiring construction of new buildings."

Under the title of *Secrets of the Luxor Pyramid*, four main characters — two good and two evil — discover the remnants of an ancient advanced civilization and struggle to find and exploit the power of the pyramid, a lost obelisk. In the first film, representing the past, a couple on an archaeological dig finds evidence of an unknown civilization. This segment was shot in VistaVision format at 48 frames per second, and used a fisheye lens to paint a 180-degree wrap-around image on a spherically-curved screen. The four-minute film holds six Ridefilm motion simulators, each with 15 seats, as well as a static bay for handicapped ridegoers. The second film, "Luxor Live," is a parody of a live talk show and was produced in Showscan format and rear-projected on a screen, which is part of the set. It also employs a live actor, video projection screens to simulate a live TV feed, and a 3-D component, projected at 48 frames a second on a huge screen. The episode runs for 17 minutes and the theater seats 135.

The third theater, representing the future, "is a little more accessible, more melodramatic, and there is sufficient character development and dialogue for the audience to grasp the concept," says Trumbull. Shot in VistaVision at 48 frames a second, the film is projected on a vertical, 70-foot-high by 35-foot-wide screen in a theater banked at 45 degrees — an experiment on Trumbull's part with a ratio more similar to the way we take photos and present images in the print media. The program runs for 15 minutes, and the theater holds 350 people.

Having been in the business of special-venue films pretty much from the beginning, Trumbull and company have enjoyed the new technologies that have come to make their craft easier. "We used a lot of (Eastman EXR) 5248 film on the Luxor projects, which is a lot finer-grained than the older 100-speed films. One of the biggest advances is the new T-grain (Eastman EXR 5244) intermediate stock. It doesn't add any grain, and that's important because grain is magnified on a big screen."

Digital technology, of course, allowed them to do things they hadn't found possible before. ""We did a lot of visual effects digitally at TCI, though we went to Cinesite for high-resolution film scanning. Generally, it's astounding that we can send our negative out, get it scanned, get it back on a cassette, do all of our postproduction digitally, and then write it back onto film that looks exactly like the original negative in quality and grain structure and sharpness.

"There were scenes in *2001* that were held in the freezer for over a year, waiting for matte paintings to be filmed. We had to build miniatures, and some of it [consisted of] painted backgrounds and starfields. Earth was added as a backlit animation pass. Now, you can do most of that in a computer with CGI and output to film."

Kleiser/Walczak Construction Company contributed a great deal of CGI augmentation to the films. "[TCI] generally cre-

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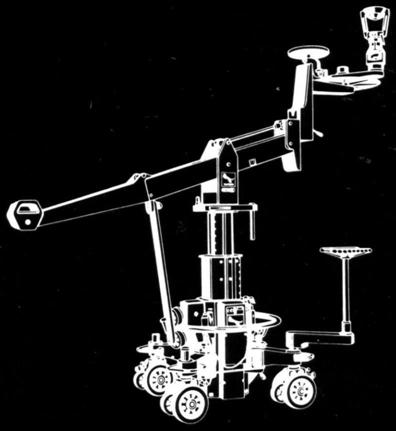

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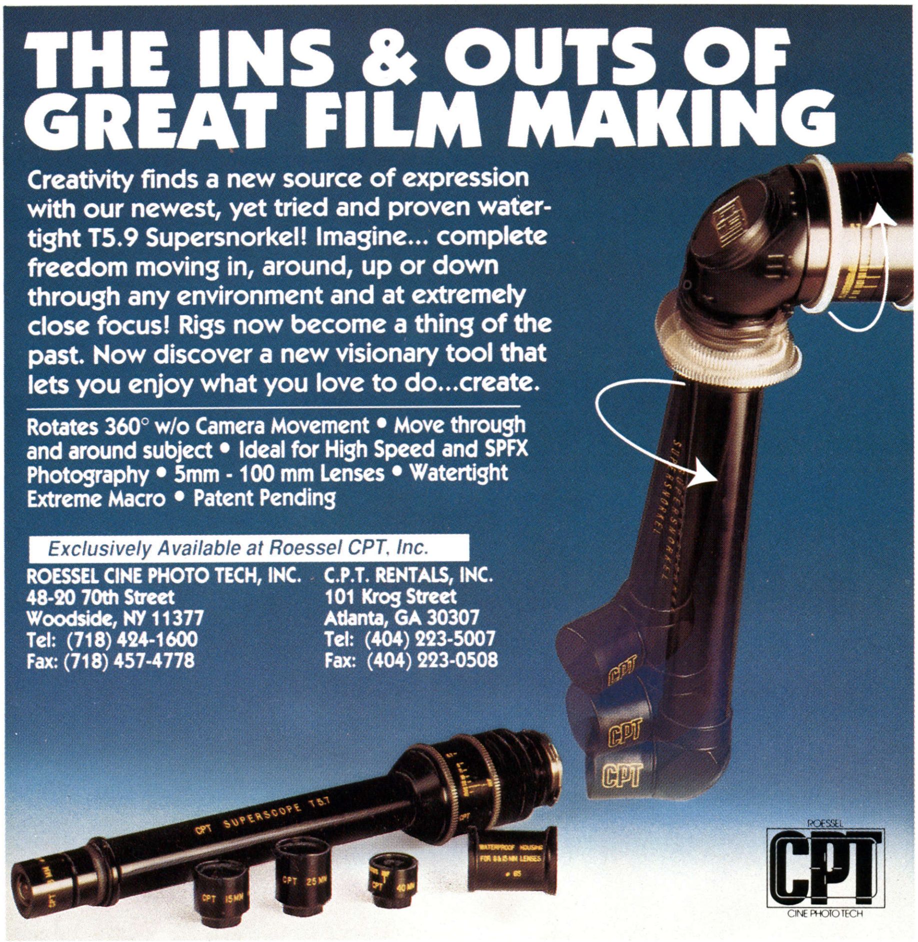
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ated the background environment in miniatures, and then used CGI to fill it with flying vehicles or effects, laser beams, clouds, smoke and other things that would be extremely difficult to create with traditional animation techniques, or with miniatures and stop-motion photography."

Also gone digital is the sound of the films; the theaters were built to achieve a greater degree of isolation than traditional theaters from environmental noise, and features a specially designed sound system.

As with *Back to the Future — The Ride*, the Luxor films are short — to keep audiences moving, but also due to the intense nature of the presentation. "My rule of thumb," says Trumbull, "is that as you increase the power of the medium, which is a very sensory experience, human beings seem to want the time frame of immersion in that experience to be shortened. Very few successful Imax films are longer than 40 minutes. When you're looking at the big screen with a huge density of information, you just don't want to watch it for as long as a regular feature film.

"If you look at a simulation ride like *Back to the Future*, which is four minutes long, it's a pretty overwhelming, immersive experience. If it was six minutes long, you'd say, 'Get me out of here, this is too much.' There is some kind of an inverse ratio between immersive impact and length. That's what we experimented with at Luxor. It has to do with my belief that audiences today are very sophisticated in their ability to absorb media, but also very impatient. We're in a culture that has less leisure time."

Trumbull sees entertainment complexes such as Luxor as the future of the industry. "Shopping malls are the town squares of today," he observes. "People still want to get together, to show their clothes off and meet their friends. It happens at a mall now, instead of in some park with a lake. Malls have gone through an

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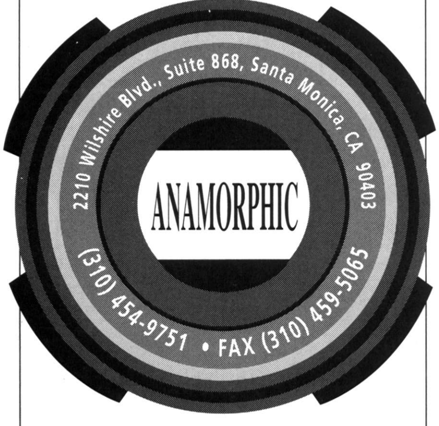
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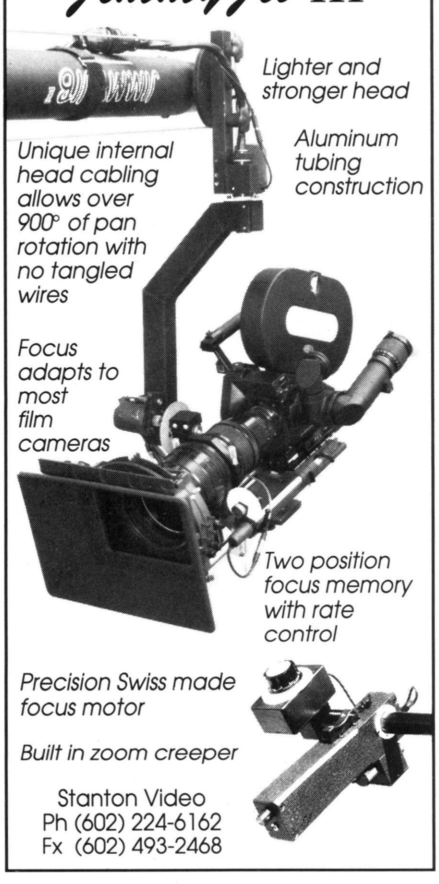
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evolution. There's much more of a food component, and now we are building an entertainment component. Many malls now have multiplex cinemas, either adjacent to them or in them. Every mall owner is trying to find a way to get a greater flow of people through this town square by adding an entertainment component. They are now beginning to realize that you can't put a theme park indoors. It costs too much and takes up too much space. But with high-technology media — and I'm talking about Imax, Imax Dome, Showscan, 3-D, simulation rides, virtual reality and interactive video games — that kind of entertainment can fit into a small space indoors. The next step is bringing those diverse kinds of entertainment together under one roof in a businesslike way.

"I think we will see urban entertainment centers, or what some people call location-based entertainment, in every part of the world. The formats are going to need to be standardized to a certain extent to ensure some form of mass distribution. I believe that if you develop powerful enough and immersive enough entertainment forms, there will be enough sites out there to distribute them in a profitable way."

Others who share his vision are Iwerks, which built Cinetropolis in Connecticut, and Sony, which is building an Imax 3-D theater in New York City. "Every theater exhibition chain is looking into simulator rides and video games as adjuncts to their entertainment. Every major media company, and that means all of the studios, is developing plans for indoor urban entertainment centers," says Trumbull.

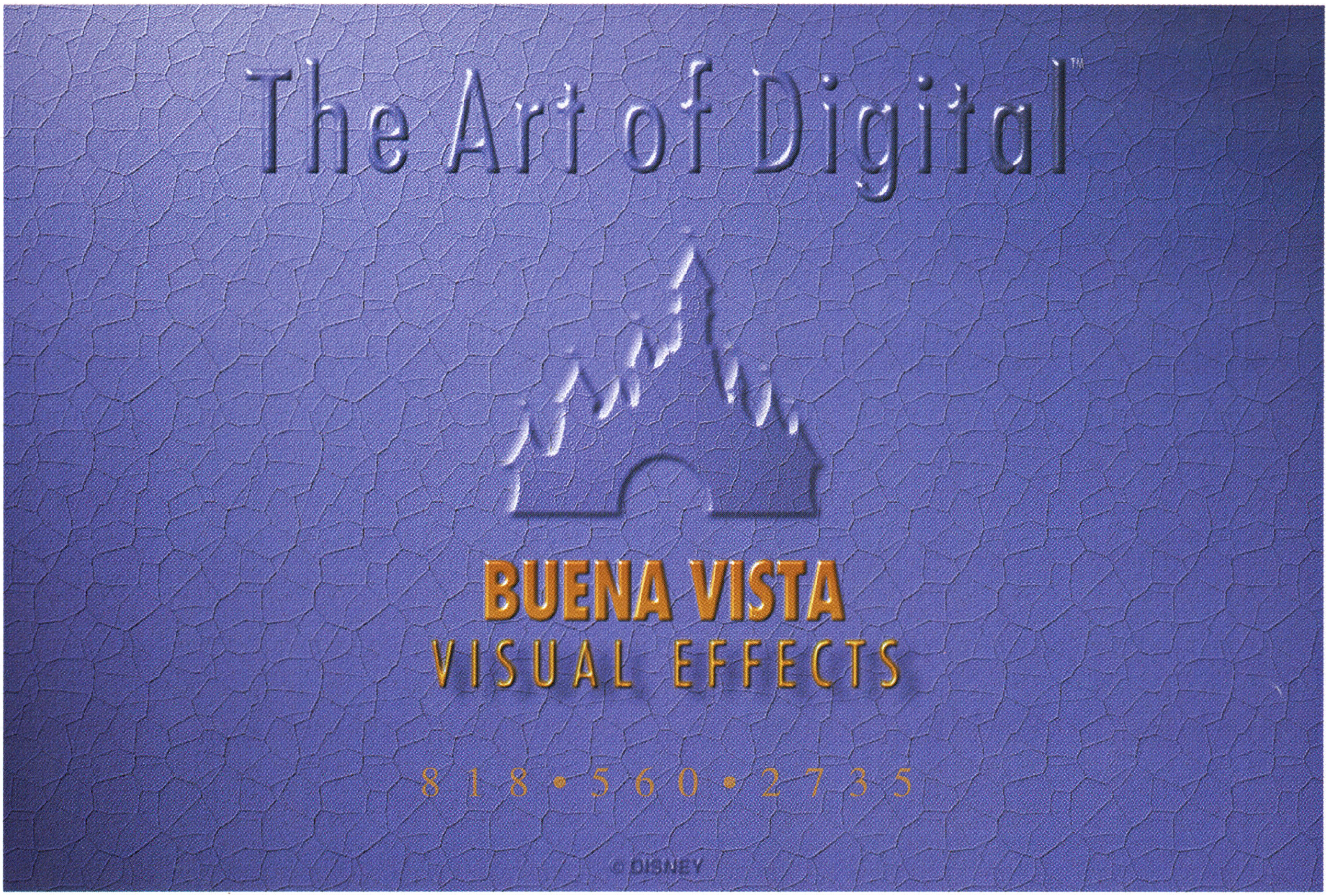
With the changes in home entertainment seen for the future — high-definition, widescreen, interactive television, digital sound, an infinite number of channels, movies on demand — the industry is going to be hard-pressed to get people out of the house, and will be looking for ways to deliver experiences not available over the television. Entertainment will be getting more spectacular.

This trend is right up Trumbull's alley. "I realized that in order to go forward with my work, I needed the infrastructure of a company that is dedicated to advancing the state of the art. The Imax Technology Centre in Toronto is a spectacular facility, where they fabricate and assemble projectors, lenses and cameras, and maintain their camera department. It's the only place in the world I know of that provides this kind of support for a non-standard film technology.

Imax debuted at the world's fair, in Osaka, Japan in 1970. Its first and primary hosts are institutions such as museums — the first Imax Dome film theater was installed at the Reuben Fleet Space Center in San Diego — but Sony's new theater complex in Lincoln Center in New York City is opening around Thanksgiving, featuring a giant-screen Imax 3-D theater combined with Imax' PSE (Personal Sound Environment) stereo digital sound. Sony Studios is currently producing a 3-D Imax film, the first in a planned series and the first time in many years that a major studio has aligned itself with a non-standard film format for a theatrical release.

The company, says Trumbull, will continue to create institutional films for science museums, "but the new market is dramatic entertainment films, and that provides incredible opportunities for the future. To bring to the urban entertainment complexes the numbers of people the developers are looking for, I believe movies will have to become more spectacular and immersive."

Trumbull sees more hope for Imax than Showscan due to the timing of its introduction. "Showscan entered the market at a time when the movie business was deep into its multiplex stage. It used to be really unusual if a studio ordered more



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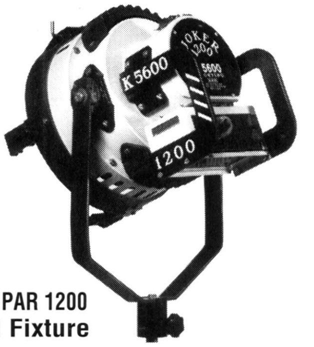

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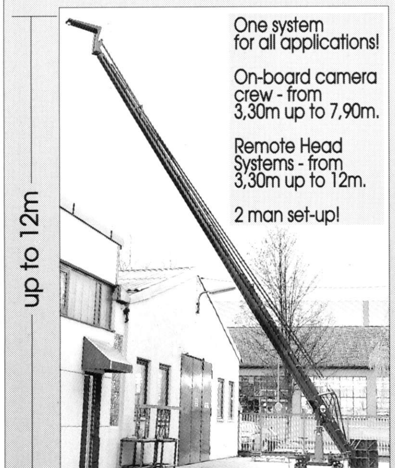

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than 300 prints for a first run. Now it's 2,000 to 3,000. That creates a kind of massive inflexibility for adapting any change in format, because the retooling costs are too high. Imax already has a base of theaters, and it is growing at a reasonably rapid pace."

While he doesn't see traditional feature-length films waning in popularity, he does see a move toward shorter, more immersive types. "I think it's important for us to acknowledge that the film theater is an important social phenomenon. Films provide important cultural experiences as well as entertainment. I don't expect movies as we know them to go away. It's an absolutely fabulous classic art form that is going to be around for a long time. It's going to be augmented by alternative forms of entertainment."

Confirming his theory was the Academy Award nomination for the Imax film *Fires of Kuwait*. "It showed me, and I think a lot of other people, that when you can see something with the clarity that makes it seem like almost an approximation of the real thing, you get a completely different feeling than reading about it, or seeing it on TV, which tends to minimize everything.

"I think that Imax provides a really profoundly important experience for people. I was at a private screening about a month ago at the Smithsonian, where Imax was running some dailies from a new movie called *Destiny in Space*. There were uncut rushes from the space shuttle mission in which the astronauts rescued the Hubble telescope. Some of the astronauts, who were on the mission, were sitting right behind me, and I got to talk to them. They were totally awestruck that the Imax experience was so close to what it was like for them in space. They said that in many respects it was actually better, because they didn't have the restricted view of being in their helmet. They could sort of sit back and experience the gestalt of the entire scene. They said that the Imax experience was replacing their own real memories of what it had been like in space. That's a pretty profound statement.

"[Such films] could also have a really profound role in education, and in the way we perceive the world in general. Before *Close Encounters*, our perception of extraterrestrials was that aliens were going to come and eat our babies, kill our wives and steal our chickens. Suddenly this transformational movie comes along and changes our collective thinking. It taught us that contact with aliens could be really cool. When you have all this media power behind you, I think you have to handle it responsibly. I would like to think that I'm not just producing pure entertainment, and that I'm offering something of value."

Imax currently has 110 theaters in operation, with 30 more scheduled to open during the next two years. Trumbull is looking forward to experimenting with the 3-D Imax camera and the company's PSE digital stereo sound technology. The company continues to work on perfecting the cameras, making them more lightweight and quieter, and providing the basic infrastructure for production, such as Imax subsidiary 70 MM Inc., in Los Angeles, which provides 35mm dailies for editing like a 35mm film.

"As a filmmaker, I'm excited because I think I'll be able to experiment with a new type of dramatic filmmaking that I'm only beginning to define. When you're dealing with a one-on-one relationship between the observer and the film, it's a totally new animal. You can think differently about the question of time, the relationship of the camera to the subject, and the dramatic relationship between the audience and the performers. It's like discovering a new continent." ✻

Framing the Past Projecting the Future

LOYALTY · PROGRESS · ARTISTRY
ASC
AMERICAN SOCIETY OF CINEMATOGRAPHERS
75
SEVENTY-FIFTH
ANNIVERSARY
1919-1994

FOR THOSE WHO THINK TODAY'S PROBLEMS ARE NEW, OR that history has nothing to teach us, skip ahead, for the first section of this commemorative publication is persuasive to the premise that "There is nothing new under the sun." Cinematographers, it seems, have had the same concerns throughout the history of their profession — only the ASA numbers have been changed.

Part II might be profitably cast as the antagonist — it's a chronicle of new techniques and equipment developed by ASC cinematographers over 75 years. The healthy tradition of innovation that characterizes the ASC may be its most overt contribution to the larger film community.

Part III, in short, is extrapolation by those with the most accurate information. For in the future, the Society will indeed be whatever the members of the ASC and their successors make it.

Appreciation is due John Bailey, ASC, who helped research the excerpts that appear below. The final selection was the editor's, and articles were chosen according to their particular interest and resonance for today's *AC* reader.

One final note: Several of these articles reveal outdated terms and attitudes. By reprinting these unchanged, we do not mean to endorse or lend credence to them; these attitudes existed and to pretend they didn't by expunging them might do more harm than good.

— Editor

* * *

November 1921

"How It All Happened":

A Brief Review of the Beginnings of the American Society of Cinematographers.

by H. Lyman Broening

The formation of the first motion picture camera club, in America, came about under somewhat mysterious and peculiar circumstances. During the summer of 1912, while employed at the Edison studio in the Bronx, New York City, Messrs. Frank Kugler, Philip E. Rosen and Lewis Physioc got their heads together. These men were operating cameras for the Edison Kinetoscope Company, at a salary of $18.00 per week. The Motion Picture Patents Company group of producers practically controlled the industry, making it impossible for an employee to seek safe employment with independent concerns.

Anonymous notices were sent out to as many cameramen as it was possible to reach, with a request that they reply to a certain office in the Tribune Building. A few straggling replies were received and a meeting was decided upon. The eventful evening finally arrived. Heinebund Hall, at Thirty-fourth Street and Eighth Avenue, was the trysting place. Thirteen men appeared, each a stranger to all the others, and with no definite idea as to why they were there. After a few anxious moments a waiter came in and distributed to each a paper which read, "This meeting is yours." Then things began to happen. A temporary chairman and officers were appointed from among the small group and they proceeded to get together.

Lest there be opposition by the producers, the meetings were secretly carried on regularly for six months and, with the establishing of a friendly interest among the cameramen, "The Cinema Camera Club" made its debut into motion picture society. The expected opposition never materialized, and with a rapidly increasing membership, quarters were opened in a building in Columbus Circle.

The next move, in 1915, was to the Times Building, where spacious offices were occupied by the rapidly progressing organization with a register of over 120 members. The first social event was a ball, held at the Palm Garden Hall, which proved a huge success and added prestige to the Club. A second affair followed, a year later — an invitation dance at Pabst Colosseum in Harlem.

During this course of events a similar body was formed in California known as "The Static Club." Both were formed for social reasons, for an exchange of ideas and for the general advancement of the cameraman and his work.

Later on, the "Static Club" changed to the "Cinema Camera Club," and an affiliation was formed with an exchange of membership. In 1916 a house organ, "The Cinema News," made its appearance and for a time was fairly successful. "Static Flashes" was also issued as a representative paper of the western club.

In 1918, at a regular election, Mr. Philip E. Rosen was voted into office for the third time as president of the Cinema Camera Club, but was called out of town and resigned his office. Mr. Rosen arrived in Los Angeles in time to attend the last few meetings of the Cinema Camera Club, of California, which was sadly waning. The membership was badly mixed up and plans to continue were apparently useless. The assistance of Mr. Rosen was sought, by reason of his experience in these matters, which resulted in the appointment of a committee upon re-organization while the Club went through the dissolving process.

On Saturday evening, December 21, 1918, a meeting by the members' newly appointed committee of ten was held at the home of Mr. Wm. Foster. A board of governors was established, consisting of the ten members present and five more selected. This constituted the beginning of the "American Society of Cinematographers," with the motto of "Loyalty, Progress and Art," and marked the formation of a society of cameramen, whose work and names stood for the highest in the art of motion picture photography, for the purpose of furthering cooperation between cameramen, directors and producers. The rule of membership by invitation was inaugurated.

The second meeting, held the very next evening at the home of Mr. Fred Granville, resulted in the election of these officers: Mr. Rosen, president; Charles Rosher, vice-president; Homer Scott, second vice-president; Wm. Foster, treasurer; Victor Milner, secretary. By the time the fifth meeting was reached, the society occupied quarters in the Markham building, Hollywood, its present home.

* * *

August 1922

The Cinema in 1932 — A Prophecy

Unroll ten of the years gone by. Think back to the pictures of 1912 — What, then, will another decade bring?

by Victor Milner, ASC

Some time ago a production, photographed in 1912 by Tony Gaudio and featuring King Baggott and Mary Pickford, was exhibited at an open meeting of the American Society of Cinematographers.

Those at the meeting who viewed the picture realized that, if judged by the standards of 1912, it was nothing short of a master effort for that period. The director and the players no doubt had used all the film knowledge at their command to make it their best. Tony Gaudio had certainly employed everything known to the cinematographer at that time. But the difference between the 1912 effort and the pictures of today stressed most forcibly the advancement which has been made in films in the past 10 years.

1932?

If so much progress has been made in the past decade, what, with the art as young as it is, are we to expect in 1932?

Will the feature of today seem in 1932 as the 1912 picture does at present?

Will we have escaped the glary artificial carbon lights 10 years from now? The players who have to work before such lights are surely to be pitied. Will, in 1932, an amazing amount of equipment still be necessary to light a set as at present? Will we be working with a sensitized emulsion much more sensitive than that of today?

Methods?

Will an antinic Mazda light, screwed in a regular socket and with the addition, perhaps, of a few "U" tubes, give us a reproduction of lights and shadows as we see them instead of the present exaggerated effect? Picture the cinematographer of 1932 using natural interiors. Very often there will be no use of heavy cables and dozens of "Winfields" to run over hardwood floors.

Picture an actor sitting in an easy chair, reading with a lamp at his side — how much more effective it will be if we could screw in a photographic Mazda lamp and reproduce the soft mellow color falling from the light, etc.

The man who puts himself in the position of a prophet places himself in difficulty. Possibly the writer is doing just this thing right here. But to every student of cinematography, it is more than evident that there must be changes in this art and industry which we are following in the ten years to come just as there were in the ten years which we have lived through.

Pioneers

We, if you will permit, are the pioneers. We have scratched the surface. Great facts and truths remain to be dug up and uncovered. It's our task to conduct as much research, to learn as much as we possibly can about our undertaking outside of the things that are necessary for only the drawing of the paycheck. After all, the quality of our work governs the amount of our salary. Therefore, there is a material as well as an artistic inducement to spur us on. Before we cinematographers who are filming pictures today give way to young men — the writer realizes that most of us are by no means old men as yet — you will observe changes which the writer has endeavored to outline here. But in the meantime we must all work hard — very hard.

The writer hopes and expects these conditions to come about, and who knows — they may be here much sooner than 1932. We are living today in an age of invention. The picture today can stand a revolutionary change. The public must be given something different, and naturally the ASC is looked to, cinematographically, to lead the way.

MEMBERSHIP ROSTER
1919-1994
Active members
Abbott, L. B.
Abel, David
Ahern, Lloyd
Allen, Paul H.
Alley, Norman
Almendros, Nestor
Alonzo, John A.
Alpert, Herbert
Alton, John
Andersen, Gert J.
Anderson, Howard A., Jr.
Anderson, Milford A.
Anderson, Wesley H.
Andriot, Lucien
Arling, Arthur
Arnold, John
Ash, Jerome H.
Askins, Monroe
Askins, Tony
August, Joseph
Austin, Charles
Avil, Gordon

Baggot, King
Bailey, John
Baker, Friend F.
Ballard, Lucien
Ballhaus, Michael
Barlatier, Andre J. R.
Barnes, George S.
Beascoechea, Frank
Beckway, William J.
Bell, Charles E.
Benoit, Georges
Berenguer, Andres
Berenguer, Manuel J.
Berger, Carl
Binger, R. O.
Birnkrant, Donald
Biroc, Joe
Bode, Ralf
Boggs, Haskell
Boren, Lamar
Borradaile, Osmond H.
Boyle, Charles P.
Boyle, John W.
Bradford, William W.
Bredell, Elwood
Brodine, Norbert F.
Broening, H. Lyman
Bronner, Robert J.
Brotherton, Joseph
Brown, Edward R.
Brown, James S., Jr.
Brown, Karl
Browne, Fayte M.
Bruce, Robert C.
Brun, Joseph
Burke, Charles E.
Burks, Robert
Burum, Stephen H.
Butler, Wilmer C.
Byars, Taylor
Byrne, Bobby

Caparros, Ernesto
Caramico, Robert

ACTIVE CONT.
Carbajal, Jose Carlos
Cardiff, Jack
Carter, Ellis W.
Castle, Walter H.
Chancellor, Philip M.
Chuck, S. C.
Clark, Curtis
Clark, Daniel B.
Clarke, Charles G.
Clawson, L. Dal
Clemens, George T.
Cline, Robert E.
Cline, Wilfred M.
Cline, William T.
Cloquet, Ghislain
Clothier, William
Collings, Russell D.
Colman, Ben
Colman, Edward
Comstedt, Olle
Contner, J. Burgi
Cooperman, Jack
Corby, Francis
Correll, Charles
Cortez, Stanley
Cory, Ray
Cotner, Frank M.
Couffer, Jack
Cowling, Herford T.
Cox, Vincent G.
Crabe, James
Crockett, Ernest
Cronenweth, Jordan
Cronjager, Edward
Cronjager, William H.
Crosby, Floyd D.
Cruickshank, Art
Cully, Russell A.
Cundey, Dean

Daniels, William H.
Davey, Allen M.
Daviau, Allen
Davis, Charles J.
Davis, Mark H.
Dawn, Norman O.
de Grasse, Robert
Dean, Faxon M.
DeBont, Jan
Del Ruth, Thomas
Depew, Ernest S.
Deschanel, Caleb
Deverman, Dale
DeVinna, Clyde
DeVol, Norman
Dickerson, Ernest
Dietz, William H.
Diskant, George E.
Doran, Robert V.
Dored, John
Draper, Lauron A.
Drury, Drummond
Dubray, Joseph A.
Duncan, Victor
Dunk, Bert
Dunn, Linwood
Dunning, Dodge
DuPar, Edwin B.
DuPont, Max B.

January 1924

The Cost of Cinematographers

Why a properly paid cinematographer is inexpensive.

by George Schneiderman, ASC

Much has been said the past several weeks about cutting the cost of motion picture production. Prominent film officials have been quoted as saying that salaries must come down, from the star to the property boy.

It has been intimated that if it is not graceful to cut existing salaries there will be substitutions, wherever possible, of workers who are content with smaller salaries.

The effect of the rigid execution of such a theory, if it is ever followed, remains to be seen. Perhaps the exercise of parts of the theories might bring wanted results.

But there is one element in the cost of production that is seldom reckoned with, and that is the waste and loss of time. Few of the executive statements, which were published in a spirit of alarm by most of the press, took this important factor into consideration.

Has the average executive ever stopped to compute how many dollars are lost to his organization because salaries and rentals were running on and mounting up because some company or companies working under his banner were marking time when they should have been shooting? The loss thus occasioned includes within its scope the salary of not only one high-priced celebrity but that of all the workers in the company.

What one factor can be the most expensive cause of loss of time and production waste?

Those who understand production will tell you — the inexperienced or inefficient cinematographer.

He can be an expense thus in a dozen different ways. He can call for the wrong lighting equipment to take on expensive location trips, equipment that, on reaching the location, must be sent back for others lest the scenes be shot improperly. Meanwhile time is wasted.

He can fail to take advantage of delays [caused] by weather by not shooting scenes which are not dependent on the weather — while the company sits around wasting time and drawing salaries waiting for sunlight.

He can cause improper lighting equipment to be introduced on expensive sets, so that the scenes must be retaken or else, imperfect, be allowed to pass.

He can, last but not least, be conducive to any number of delays and wasted film that will occur without end as the result of incompetence.

What usually is the reason that an inferior cameraman is permitted to be placed in a position where he will cause production expense to soar without justification?

Usually because his salary is a low figure. That's the answer. The average producer knows little or nothing of the qualifications of a cinematographer unless he is particularly familiar with the work and the working methods of the particular cameraman that he may hire. Consequently, when he wants a cameraman he only wants a cameraman, that's all — just as if they all fitted a single pattern, labeled "cameraman," without regard to ability or qualifications — he is apt to pick the man who names the lowest salary. There is no distinction in his mind as to ability. Turning a crank is turning a crank. If he gets it turned for half the price, he is that much ahead of the picture.

But is he? Sometimes he wakes up, after a few thousand dollars have been wasted, and places his finger on the spot where the trouble lies. Other times he continues to hire inferior, low-salaried but expensive, cameramen — and as a result pays for increased production cost. The entire cost of an efficient cinematographer, at a "good" salary, is a small item in comparison to other costs, considering what he has to do, his responsibility, results expected and obtained.

But what assurance can the producer have of getting an able man if he knows little or nothing as to cinematographic qualification? Probably none, if he relies on his own choice to the extent of picking a man because his salary is comparatively low.

The writer knows of one reliable general source from which the producer may safely pick his cinematographer — that is the American Society of Cinematographers. Cinematography is no longer an experiment. The ASC has long since recognized that. Its membership is not open to men who are still in the inexperienced stages of cinematography, whether they have been at the camera a year or ten years. Instead, only those cinematographers are invited to ASC membership whose work has *consistently proved* their ability. Remember that the men who have thus accepted the invitations which have been so carefully extended and who have become ASC members are men whose record — not their salary, and not because they turned a crank — establishes their merit.

If they would not be thorough in every part of cinematography, if they would not be able to meet every cinematographic demand of the producer, if they were not above causing waste and loss of time, they would not be ASC members.

That is the producer's assurance in calling on ASC members.

And it is also his insurance for good photography and against unnecessary expense. The first thing a businessman thinks of is to insure his investment, regardless of whether it is stock or property. He rests better when he knows that his investments are all covered by insurance. And the ASC member will relieve the producer of cinematographic worries.

Finally, the fallacy of "cutting expenses" by hiring an inferior, low-salaried cameraman is very plain — it is just another way of *creating expenses* and running up the cost of production.

The efficient cinematographer is an investment. He is worth, as a detailed and accurate report of production would show, every cent that is paid to him. His salary should not be cut. It should be raised if anything. He protects the producer's investment.

* * *

November 1929

Concerning Cinematography

A Few Words From Ernst Lubitsch on Cinematic Conditions,

as Told to William Stull, ASC.

The cinematographers of Hollywood have had some colossal obstacles placed in their way since we began to make talking pictures, but they have surmounted them wonderfully. I think that the quality of photography they are getting now has come back almost to the high level of the old days — almost, but not entirely! There are still a few things to be overcome before we get back that absolute perfection again, but these last few months have seen great progress.

Probably the greatest evil has been the policy of using a number of cameras on every scene, and trying to do long-shots, close-ups, and everything else all at once. The booths have been inconvenient, but in the hands of such a skillful cinematographer as Victor Milner, ASC, who photographed my last picture, *The Love Parade*, they are no more than inconveniences. But the real handicap has been this business of having to use so many cameras. On silent pictures, we only used to use one camera — and that kept the cameraman busy; now, on the talkers, we have to use three or four cameras always, and sometimes more. It is entirely the wrong system — unjust to the cinematographer, to the actor, and to the director. They tell us that by using so many cameras we are saving the company time and money; well, if we are, those of us who have been making silent pictures the other way these last twenty years ought to be in jail! Just think of all the money we must have wasted by concentrating on one angle of a scene at a time — and making it good!

Just the same, this change in the camerawork of the talking films has done one good thing. It has freed the first cinematographer from the mechanical routine of running his camera. That is good. Anyone can run a camera, but it takes a real artist to arrange the lighting so as to bring out the full beauty of the set and actors, and match the emotional key of the scene. That is a very great job in itself, and to have the first cameraman free to do this without the routine bother of cranking a camera is a very great help to a director. For myself, I do not believe in this present craze for covering a set with directors of dialogue, directors of dancing, directors of music, and all the other would-be directors who are interfering with the director's work. I would not make a picture that way, for it could not be a satisfactory picture with so many minds trying to govern it. But to have my first cameraman free to direct the photography is another matter. It is really what he has always been doing, and anything that gives him a chance to do his work better is just making things so much better for me. It is better, too, for the company, for he can do his part better and quicker, and on the rare occasions when we have to work overtime, he can still remain to direct the photography, so that it, like the dramatic part of the picture, would be the product of a single mind's supervision. That is how things should be done in every department. That is the way it is often done in Europe. There, for instance, the director is more active in preparing and editing his pictures than is usual here; and, again, the art-director is responsible for everything about the set: one man designs it, supervises its construction, paints it, and dresses it. Our art-directors there are a much more intimate part of the production than they are here — they stay right with the picture from start to finish, even being on the set with us while we are shooting, ready to make any repairs or alterations that may be needed. Over here, there is a separate man for all of these duties — a separate mind to interpret the original design in his own way. Only once over here have I been able to have my art director work through the picture with me as we did in Europe: that was in *Lady Windermere's Fan*, a picture which I think had the most perfect sets of any I have made; and most of the critics were kind enough to agree with me on that point. So now, of course I believe in these changes which are giving the first cameraman a freer hand in their work.

In Europe they are learning to cooperate more and more with the cinematographers. Just recently I saw a picture made by an American cameraman who has moved to Europe. Here, he was considered good, but only good, and he probably never got a real chance to do his best work; this German picture of his was much more than good, for he had been

ACTIVE CONT.
Dyer, Edwin L.
Dyer, Elmer G.

Eagler, Paul E.
Edens, Alric
Edeson, Arthur
Edlund, Richard
Edouart, A. Farciot
Elmes, Fred
Elsenbach, John
Ervin, Russell
Evans, Perry

Fabian, Maximillian
Fallorina, Higino J.
Fapp, Daniel L.
Farrar, Vincent J.
Feindel, Jock (Arthur)
Fernstrom, Ray
Fildew, William
Finger, Frank
Finnerman, Gerald Perry
Fischbeck, Harry A.
Fisher, Ross G.
Fitzgerald, Edward
Flinn, John C., III
Flora, Rolla
Follette, Frank R.
Folsey, George J., Jr.
Forbes, Harry W.
Foster, Ray
Foster, William C.
Fraker, William A.
Francis, A. C.
Fredricks, Ellsworth
Freulich, Henry
Freund, Karl
Fryer, Richard
Fulton, John P.

Gagnier, Hugh
Gano, Glen
Garmes, Lee
Gately, Frederick
Gaudio, Eugene
Gaudio, Gaetano
Gerrard, Henry W.
Gerstad, Merritt B.
Gertsman, Maury
Gibson, H. Edmund
Gilks, Alfred L.
Glassberg, Irving
Glennon, Bert
Glennon, James M.
Glouner, Donald C.
Glouner, Richard C.
Goldblatt, Stephen
Good, Frank B.
Gordon, James
Gough, Robert J.
Granville, Fred LeRoy
Gray, King D.
Green, Jack
Greenberg, Adam
Greenberg, Robbie
Greene, W. Howard
Greenhalgh, Jack
Griffin, Walter L.
Griggs, Loyal

ACTIVE CONT.
Guffey, Burnett
Guissart, Rene
Guthrie, Carl

Hall, Conrad
Hallenberger, Harry
Haller, Ernest
Halprin, Sol
Hammeras, Edwin
Hammeras, Ralph
Harlan, Russell
Harten, Charles
Hartzband, Morris
Haskin, Byron
Hauser, Robert
Haythorne, Reed N.
Heimerl, Alois G.
Herbert, Charles W.
Herrmann, John L.
Hickox, Sid
Hickson, John T.
Hilburn, Percy
Hirschfeld, Gerald
Hoag, Robert
Hoch, Winton
Hoffberg, Seymour
Holender, Adam
Hora, John C.
Horne, Pliny
Horsley, David S.
Horvitch, Eric
Howe, James Wong
Hudson, William E.
Hugo, Michel
Hunt, Roy
Hyer, William C.
Hyland, Edward

Irving, Allan E.
Irwin, Mark
Ivano, Paul
Iwerks, Ub

Jackman, Dr. G. Floyd
Jackman, Fred W.
Jackman, Fred H., Jr.
Jackson, Andrew
Jackson, Harry A.
Jansen, William H.
Jennings, H. Gordon
Jennings, J. Devereaux
Jensen, John
Jessup, Robert C.
Johnke, Torben
Johnson, Frank
June, Ray
Jurgensen, William K.
Kaufman, Boris

Keller, Al
Kelley, Richard A.
Kelley, W. Wallace
Kemper, Victor J.
Kershner, Glenn
Kiesser, Jan
Kimball, Jeffery L.
Kizis, Jess
Klaffki, Roy H.
Kline, Benjamin H.

given a free hand, and the result was such great cinematography as any director would be proud to have in his pictures. But then, he had so much more to work with than we did there in Germany, before I came over here. Why, I remember when we made *Gypsy Blood*, back in 1919, we had almost no facilities whatever; I don't think we had more than eight lights for the whole picture! All that has changed, but one thing is the same as ever: the America cameramen are the best in the world. How we used to envy them in the old days! They knew one thing that we would have given anything to know: they could photograph their people so that the makeup didn't show! They made pictures of *human beings* rather than *actors*. They were wonderful to us then, and they still are, for they are just as far in the lead as ever.

Perhaps the greatest point about American camerawork is that it is truly artistic. It is beautiful, it is distinctive, but it doesn't call attention to itself. That is greatness in art, that it is great yet not obviously great. For when art begins to be apparent, to show itself as a definite, studied effort to be artistic, it ceases to be art, for true art needs no label. To me, that explains the greatness of American cinematography. Also, it is the key to my objection to M. Dreyer's *Passion of Joan of Arc*. That picture had brilliant moments, but it was so studied, so obviously calculated to make people gasp, and to say, "See, that is art," that it overreached itself.

Color photography? Of course it is bound to come. Right now, for myself, I prefer expertly photographed black-and-white to any of the color work so far available. It is more perfect, and less distracting. But there is no doubt a demand for colored films arising, a demand which will become universal when the technicians develop a really perfect color process — one that will show real people instead of pale, waxy dummies. Mr. Milner tells me that this will come when they work out what he calls a three-color process; I hope that one is developed soon, for it seems that they are forcing the growth of this demand for color, and if there aren't improvements technically, I think that the future of color will be unpleasantly dull.

And the future of talking pictures? Of course I'm an optimist! They are certainly here to stay, and, in spite of what everyone was saying a year ago, picture people are going to stay with them. Just think, now, of the greatest talkies of the last few months: *The Broadway Melody*, *In Old Arizona*, *Hollywood Revue*, *Coquette*, *Bulldog Drummond*, *Alibi*, *Thunderbolt*, *The Lady Lies*, and any others you might name — every one made by a silent-picture director. And where are the big ones made by your stage directors? Yes, the silent-picture-trained directors are going to be the ones who make this new medium the great thing it is going to be. And the new directors of the future are going to come from the picture-trained people, too, and as usual many of the best will be men from behind the cameras. For, whether you are making pictures silent or talking, you are still making pictures, and to make pictures you must first of all know how to see drama through the eye of a camera!

* * *

October 1931

Some Thoughts on Low-Key Lighting

by Charles Lang, ASC

The introduction of fast film brought with it great benefits to all types of cameramen, and with it too, new problems to be surmounted. I doubt, however, if any class of cameramen received quite so many of either as have those of us who, either from preference or necessity, work with a low key of lighting. Here was a new film which can inherently make our work much simpler, but which also makes us adopt a new technique if we wish to utilize its greatest benefits.

In the first place, fast film allows us to use less light. In the second place, it is naturally inclined to yield soft gradations; I doubt if it is possible to get a really over-contrasty picture with it. But — and there's the rub — this very tendency to soft gradation, which is a great advantage to the normal worker, can be the undoing of the unwary low-key worker. The reason for this is that whereas the normal worker, sometimes intentionally, sometimes unintentionally, almost invariably lights his set for quite a high degree of brilliance, the low-key worker, on the other hand, habitually works with extremely soft lightings, which, when coupled with the naturally soft characteristic of the new film, is very likely to become over-soft, and flat.

Therefore, while the normal worker can adapt his technique practically unchanged to the requirements of fast film — and even derive an appreciable degree of benefit from its invaluable softening effect — the extreme low-key worker must devise a new technique by which to combine the soft, low-key lightings which he desires and the softness inherent to fast film. In other words, the man who works in a medium or even a high key of lighting can light his set in the manner he is accustomed to, and then, with scarcely any change other than replacing the globes in his lighting units with others of lower wattage, be ready to use the new film with confidence — and in fact, get even better results than before. The low-key worker, on the contrary, can seldom do this,

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Equipment Inventions That Have Changed the Way Films Are Made

by D. Samuelson

Although the main tools of cinematography have been around in one form or another since the beginning — it's generally accepted that Thomas Edison invented the film camera, and George Eastman produced the flexible film stock used in it, and camera lenses with f/stops are almost as old as photography itself — the 100 years since the advent of the artform have seen some additions that have radically changed the way films are photographed. For this personal survey of inventions that made it possible to create images and interpret a script in a manner never before possible, we kept to those that were original (not a development or improvement of something that went before), available to cinematographers worldwide (not a one-off), and that made it possible to do something that was impossible before.

The first of these, the Latham loop, was invented and patented before the turn of the century and made it possible to run a camera for more than fifteen seconds without tearing the film. Rather than pulling film off the roll by brute force, as did Edison's camera, the new way left a few frames of slack film above and below the camera gate. Enoch Rechter and the Latham family are credited with this invention, which was developed when they needed to film an entire round of a boxing match.

In 1912 came the Bell & Howell register pin movement, used both in cameras and in optical printers, which made it possible to double expose both original photography and prints without the separate images moving relative to one another.

Also introduced in 1912 was the Moy Aerial camera, made in England specifically for filming from balloons. This camera was handholdable, had an internal battery-powered variable speed motor, reflex viewfinding, internal displacement film magazines and incorporated a gyro stabilizer. Not until the coming of the Panaflex and the Arri 35BL some sixty years later was there another 35mm camera with an internal electric motor. (A model still survives in the Samuelson collection at the MOMI museum in London.)

The introduction of the camera crane for the first time separated the camera from the ground and gave fluidity of movement. Although no one is sure who made the very first camera crane -- in the early days, studios manufactured and operated camera cranes for their own use -- one of the first recorded uses of it was during the making of D.W. Griffith's *Intolerance*. Regrettably, no pictures or

continued on page 76

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for if he does, he will find his work becoming gray and flat. Therefore, he must discover a new technique of lighting which will give him the effects he desires without the exaggerated softness which he does not desire.

It is easy enough to say this, but it is quite another thing to do it. For although we may proudly proclaim that lighting is an art, and is not therefore something to be done after a set fashion — by rote, as it were — most of us have a lamentable tendency to classify the situations most frequently met with, and then to always meet with them in the same way. In a situation where one's whole lighting technique can be modified uniformly — as in the case of workers who habitually use a higher key of light — this is not entirely a disadvantage; but in our particular instance, where the only remedy is altering the technique specifically to fit the individual occasion, it is far from helpful.

Here is our problem: we habitually work with a soft, low-key lighting; we are given a new sensitive material which has an inherent tendency to softness, and which will, if we merely lower the overall intensity of our illumination, exaggerate that softness into flatness. How then are we going to utilize the economic and artistic advantages of this new film, and at the same time retain the soft but brilliant results which we desire?

The first step, naturally, is to take stock of what we have already at hand. The new film can be a considerable aid, for to offset its tendency to softness, it has several advantageous characteristics. First among these is its excellent color-separation. This represents a considerable improvement over the earlier emulsion. Second is its surprising faculty of penetrating shadows. Both of these can be turned to our advantage. If we can contrive to see to it that our sets are not monochromatic — that there is pleasing visual color-contrast in them — the superior color-rendition of the new emulsion, which closely approximates that of our eyes, will help us to get depth and brilliance into our sets. The surprising sensitivity of the new film, as shown by the way is reaches into the shadows, will also help us, inasmuch as it will allow us to concentrate more on the highlights, knowing that if some light strays into the shadows, there will be just about the degree of soft detail that we want to have in them.

So far, so good; but we have not considered our people. And our main object is to make them stand out properly. Well, having our set taken care of, we can concentrate on the actors. To my mind, the best method is to light them in quite a higher key, and rather more contrastily than usual. This, combined with the characteristics of the film — its soft gradation, its unusual shadow detail, and its superior color-rendition — should give us what we want: a soft, low-key picture, yet with plenty of brilliance to point the action. Even if we somewhat exaggerate the contrast of the lighting on the players, the softness of the film will likely tone it down to very nearly what we want.

Of course, each cinematographer uses his individual lights differently, but personally I have found that the "Lupe" is invaluable in lighting people in scenes where there are but two or three players, and making them stand out more brilliantly in scenes of an overall low key. A particular advantage of this lamp is the fact that it is mounted on a stand which must be a cousin to the microphone boom, for it permits you to place your Lupe well in the center of your picture, and fairly high up, at quite the most advantageous angle to play a fairly concentrated, yet softened, front light on the faces and forms of your players — and at the same time leaves the camera a clear field below. Such a light, so placed, will, in conjunction with a moderate amount of general front and modeling light (the former of low wattage, and well diffused), do a great deal toward giving the exact effect of low-key brilliance that we want.

While speaking of photography, I cannot let this opportunity go by without putting in a good word for the campaign which the ASC, under the direction of President Arnold, has instituted with regard to improving the quality of release prints. Leaving aside the economic questions which are naturally of even greater importance to the industry as a whole, the artistic and professional sides of the question are of great importance to the cameraman.

After all, it is by the release print that our work stands or falls. For while the cameraman does not as a rule secure a great deal of personal recognition from the people outside the industry — who are the principal ones who see the release prints — it is his business to give to them the best representation of the stars and story that is within his power. In other words, his best photography. If the photography in the final product — the release print that is sold to the public — does not exhibit the cast and story of the picture as perfectly as is possible, the work of all the other artists on the picture (to say nothing of that of the cameraman) is wasted, in exactly the proportion that the release print falls below its potential best. Every moment of the cinematographer's working day is spent in striving to get the best possible picture on the negative. The master print used in the studio is of course the criterion by which he is judged by his immediate associates and by his employers, so he is personally safe enough regardless of the quality — or lack of it — in the release prints. But his job is not really complete until his picture is on the screen and in the best possible form. In his work on the set, he must attempt to foresee every possible thing that can affect the quality of his picture between the time that it leaves his camera and the time that it reaches the screen, and inasmuch as may be possible, counteract it in advance. Motion picture photography is at best a complicated process, but when it is complicated by the unknown factor of today's variable photographic quality of release prints, it is doubly difficult. It is hard enough, heaven knows, in these days of forced-draught production, to turn out photography that combines originality and that elusive thing known as "quality," but when one is trying to do this without any knowledge of the way that quality will be transmitted to the finished release print, it becomes all but impossible to do the best work. The freelance cameraman soon finds out the qualities and characteristics of the different studios, and he is invariably happiest — and working at his best — in those whose laboratory service, whether maintained by the company or done by an outside firm, is such [that it] assures him of a definite, standard quality in his release prints. Thus, for the good of the industry as a whole, whose success so greatly depends on photography, it is to be hoped that the photographic quality of release prints will soon become as standardized as is their physical form already. When that day comes, although it will be putting the whole question of photographic quality squarely up to the cameraman himself, I am confident not only that our photography be better, but that our work on the set will be far more efficient. ▩

* * * * *

March 1943

An Open Letter to Arthur Edeson, ASC and Michael Curtiz

from Karl Freund, ASC

Dear Arthur and Mike:

A few hours ago I came out of the theatre where I saw your picture *Casablanca*. And I am writing this because I want you two to know how I feel about the very fine job you have done together. Since I saw the magnificent work Jimmie Howe did in *Transatlantic* twelve years ago, I have not seen a picture that so impressed me with its realization of what fine camerawork can mean to a production as did your joint achievement in *Casablanca*.

Judged by the yardstick used to measure the enduringly great pictures of all time, *Casablanca* may or may not be what the critics would call a "great" picture. But it is fine entertainment. And it is a truly great example of fine film craftsmanship and of teamwork between the director and the director of photography. As one film craftsman to another, I want to offer my sincere congratulations to you both on this achievement.

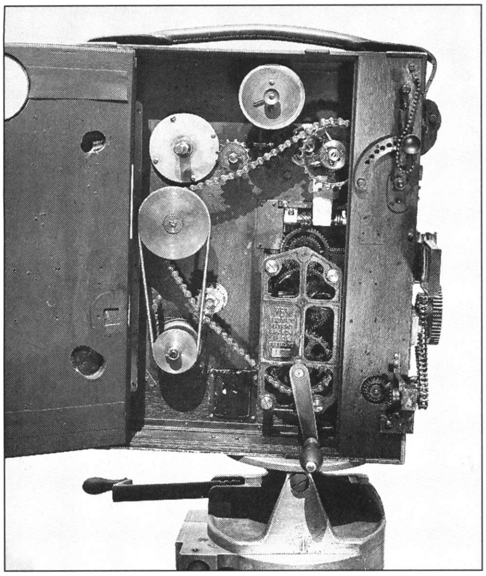
Genuine cooperation and craftsmanship are things we see all too little of these days. . . particularly the sort of understanding cooperation between director and cinematographer which made *Casablanca* so effective visually. Too often the director seems to ignore the camera entirely, except as a machine for recording his scenes in the most literal way. Or else he may go to the other extreme and become so exaggeratedly conscious of the camera that he overloads his picture with "arty" tricks of focus and angles — copied, perhaps, from something he saw in somebody else's picture — which play no real part in advancing the story or in building up dramatic moods. All cameramen know that these jugglers' tricks are not good cinematography. . . but if his directorial partner shows so little understanding of the real meaning of his medium as to insist on filling his picture with out-

ACTIVE CONT.
Kline, Richard
Knechtel, Lloyd
Koblasa, George
Koenekamp, Fred J.
Koenekamp, Hans F.
Kohler, Henry N.
Koltai, Lajos
Kornman, Anthony
Kovacs, Laszlo
Krasner, Milton
Krepela, Neil
Kull, Edward
Kunkel, Sherman
Kurrle, Robert B.

Lamkin, Ken
Lancaster, George J.
Landers, Samuel F.
Lang, Charles B., Jr.
Lapenieks, Vilas
Larner, Stevan
LaShelle, Joe
Laszlo, Andrew
Laszlo, Ernest
Lathrop, Philip
Lawton, Charles C., Jr.
Leavitt, Sam
Leonetti, Matthew
LePicard, Marcel A.
Lerpae, Paul K.
Liles, James F.
Linden, Edwin G.
Lindon, Lionel
Lippe, Leo
Lipstein, Harold
Liu, Robert F.
Lloyd, Arthur B.
Lockwood, J. R.
Lundin, Walter
Lynch, Warren E.
Lyons, Chester A.
Lyons, Reginald

MacDonald, Joe
MacKenzie, Jack
MacLean, Kenneth G.
MacWilliams, Glen
Malkames, Don
Malkames, Karl
Mandl, Fred
Mankofsky, Isidore
Marcelino, Ricardo
Margulies, Michael D.
Margulies, William
Marley, J. Peverell
Marquard, Brick
Marquette, Jacques
Marsh, Oliver T.
Marshall, Charles H.
Marshall, William
Marta, Jack A.
Martin, John J.
Martinelli, Arthur
Martinelli, Enzo A.
Martinelli, Vincent
Marzorati, Harold J.
Mascelli, Joseph V.
Mate, Rudolph
Mayer, Fred W.

Inventions *continued from page 74*



A Moy and Bastie camera from England, patented 1909, one of the most popular cameras on both sides of the Atlantic.

details of this rig have survived.

In France, in 1927, Professor Henri Chretien invented and built the Hypergonar lens, a cylindrical anamorphic lens with a 2:1 squeeze ratio, which in 1953 became known as CinemaScope.

In 1932 Bell & Howell, using a Cooke design, manufactured the first generally available zoom lens, which went from 40 to 100mm, had an f/4 maximum aperture and had to be focused by the use of diopters. Until the invention of the spinning mirror reflex shutter by Arnold & Richter in Germany in 1938, however, these zoom lenses were very difficult to use. (Of the six zoom lenses believed to have been made, surviving models are present in the ASC museum, the Grant Loucks collection at Alan Gordon Enterprises in Hollywood, and the Samuelson collection in London.)

At about the same time Agfa in Germany came up with the first color mask negative color film, predecessor of the color films we know today. None of the earlier color systems have survived.

The three basic inventions that have fundamentally shaped the way we shoot sync sound today are magnetic recording, developed from the pre-war German Blattnerphone wire recording system; pulse sync, invented simultaneously by Peter Ranger in the U.S. and Norman Leevers in England (late Forties); and the crystal-controlled camera motor from Perfectone of Switzerland in the late Sixties.

The development in the early Fifties of the retro-focus or inverted telephoto lens made it possible to use a wide angle lens with a mirror shutter camera. Before Angenieux of France introduced their 18mm lens with a long back focal clearance, the widest angle lens that could be used on an Arriflex camera was 28mm.

In 1955 filming from helicopters became more practical with the invention of the counterbalanced helicopter mount, which used the principal of inertia to damp out the vibrations caused by the rotor blades. The Helivision mount, developed by Albert Lamorisse in France and used to wonderful effect in *The Red Balloon*, showed the possibilities of this camera platform.

The early Sixties saw the introduction of the crab dolly, incorporating a hydraulic arm to raise and lower the camera. With the MacAllister dolly it became possible to steer a dolly by two or four wheels, to move it forwards, backwards or sideways, and to move the camera up and down at the same speed as a person could stand up from a sitting position.

In the late Sixties Garrett Brown's Steadicam added yet another dimension to camera movement. Handholding a camera had been possible since 1908 and, provided the lens used was limited to a wide angle, it was possible to do so with reasonable steadiness — what the Steadicam did was to make it possible to float the camera in space and glide it from setup to setup.

The Louma camera crane, developed in the late Sixties in France (and added to in England by the invention of the remote control camera head which emulated a normal geared head) placed the camera where it had never been before: it could be set up on a lightweight platform and then dipped into a scene, allowing 360-degree pans without showing the camera crew. Another radical development was its ability to be disassembled into pieces light enough to be carried by at most two people.

The same time period saw the introduction of the handholdable sync sound 35mm studio cameras. Quiet, shoulder-holdable cameras had long been available in the 16mm format (the Eclair NPR from France), but the introduction of the Arriflex 35BL and the Panaflex cameras made it possible to shoot dialogue scenes in circumstances that were not possible with Mitchell BNCs and the like.

The major developments of the past decade have been spin-offs of the microchip age. Motion control opened a new era of special effects cinematography and digital manipulation; and compositing is a revolution as great as any before.

Freund Letter *continued from page 75*

of-place tricks, what can the poor cinematographer do but deliver them — and grow discouraged in the process?

To you, Mike, I want to express my admiration of an artist who knows the value of legitimately fine cinematography and who, as evidenced by what I saw on the screen not only in this picture but in all of your productions, is always willing to give his cinematographer a free hand to contribute it outstandingly to the benefit of the production.

To you, Arthur, I want to express my admiration for having risen so magnificently to the opportunities Mike and *Casablanca* gave you, and turning in the crowning achievement of a long and distinguished career. For too many years you have been assigned to productions which did not give you any opportunity to demonstrate the skill your fellow cinematographers know is yours. But when the opportunity came, your mastery of all the resources and subtleties of cinematography enhanced both the dramatic and the physical values of the production. I am sure that what I saw on the screen was put there much more by your skill in lighting and composition than by anything that existed actually on the set. Your picture unfortunately is not up for the Academy Award this year — but you can have mine any time you want it. An achievement like yours deserves the highest recognition [we] can bestow.

I know you two were backed up by a fine and far-seeing studio organization, from producer Hal Wallis right on down the line. But if there had not been outstanding ability, understanding and cooperation on the set, I would not now be writing this letter. You may wonder why I am doing it, anyway, since I am at another studio, under a contract which still has four years to run.

The answer is simple: I feel that now, perhaps more than ever before, our industry, and the world at large, need fine pictures. Above all, we need the sort of understanding, sympathetic teamwork between director and cinematographer of which your picture was such an outstanding example. In the old days, this sympathetic understanding between the two key men of production used to be general; but of late something — perhaps the perpetual rush to meet production schedules — has crowded it into the background of our daily work.

I am sure I speak the sentiments of all the industry's cameramen when I say that we of the camera profession look forward to the day when that type of cooperation and craftsmanship will again be the rule rather than the exception. But until that day comes, it is only fair that those who show us, as you and Mike have, what can be achieved when cameraman and director work together as an understanding and brilliantly cooperative team, should be given recognition of our heartfelt admiration and appreciation. And in addition, I want to extend my personal thanks to both of you for having given one cameraman a thoroughly delightful evening.

Sincerely,
Karl Freund, ASC

* * *

January 1957

Techniques of Hollywood Cinematographers

Every veteran Hollywood director of photography has his own concept of how a picture should be photographed, and a shooting technique that has proved successful over the years.

by Joe Henry

Just as no two painters employ the same techniques in putting a picture on canvas, we rarely find two directors of photography who think the same and work the same in photographing a motion picture. It is this individuality in thinking and practice that makes Hollywood's cinematographers the artists they are.

Students of cinematography look to Hollywood's directors of photography for the guidance they need in the pursuit of their cinematographic studies, yet much of this must come from studying their work on the screen. Some cinematographers consider their photographic approach sufficiently distinctive to warrant secrecy, if not in its application, at least in literary revelation — which may explain why so many successful cameramen have never written a book on cinematography. There are others who consider every advancement in cinematography a boon to be disseminated for the enjoyment and good of all fellow craftsmen.

The innovations which marked the late Gregg Toland's photography of *Citizen Kane* not only contributed to the very great success of the picture, but set a new standard in feature film photography. The immediate result was that other cinematographers adopted Toland's "deep focus" technique and gave it new and interesting application.

In each cameraman's respective "bag of tricks" is something that can enhance another's work or prove the solution to an immediate problem. If only all of these "bags of tricks" could be emptied on a table for all to see, study and adapt!

Within the membership roster of the American Society of Cinematographers are 44 directors of photography who won Academy Awards for achievement in cinematography — some of them more than once. Arthur C. Miller, ASC, past president of the Society, is one of these. He won an Oscar in 1942 for *How Green Was My Valley*, a second in 1945 for *The Song of Bernadette*, and a third in 1947 for *Anna and the King of Siam*.

During Miller's more than a quarter-century of experience in motion picture photography, he evolved a definite philosophy of cinematography. The advent of sound strengthened it. Voltaire wrote: "The secret of wearying your reader is to tell him everything." Miller paraphrases it, "The secret of wearying your movie audience is to show him everything."

Thus, when shooting a picture, he maintains an acute awareness that audiences have imagination. He plays to that mass imagination with his camera and lighting. The result is that the screen never appears crammed with vivid, detailed depiction. It reveals just enough, not a fraction more — and makes the audience put its imagination into play.

Early in 1935, when he was photographing *Black Sheep*, a singular circumstance interrupted the smooth, rapid flow of scenes from stage to film. The immediate and ingenious solution is an illuminating instance of reaching down into one's cinematic "bag of tricks." Most of the footage for this story depicted action aboard an ocean liner at sea. Studio sets were used, of course. One scene called for an extreme long shot embracing the ship's promenade deck, 220 feet in length.

The lighting demands were interesting. All light had to enter the scene from one side, simulating the brilliance of reflections from the water. With the camera ready to roll on this scene, it was suddenly realized that a ship plowing through the sea has a natural roll. How to achieve this effect? The set was built on the solid floor of the studio. Rocking the camera wasn't the answer.

So Miller dug down deep

ACTIVE CONT.
McAlpine, Don
McCord, Ted
McGill, Barney
McPherson, John
Meade, Terry K.
Meehan, George B., Jr.
Mellor, William C.
Mercer, Ray
Mescall, John
Metty, Russell L.
Metz, Rexford
Miller, Arthur C.
Miller, Ernest W.
Miller, Virgil E.
Millin, David
Milner, Victor
Mohr, Hal
Moore, Milton M.
Moore, Richard
Moreno, Robert C.
Morgan, Donald M.
Morgan, Ira H.
Muren, Dennis
Murphy, Brianne
Musuraca, Nick

Narita, Hiro
Negrin, Sol
Neumann, Harry C.
Newhard, Robert S.
Nicholson, Meredith M.
Nickolaus, John M., Jr.
Niver, Kemp
Noble, William
Norton, Stephen S.
Novak, Joe
Nykvist, Sven

O'Connell, L. William
Omens, Sherwood (Woody)
Oster, Emil
Overbaugh, Roy Field

Page, Louis
Pahle, Ted
Painter, J. F.
Palmer, Ernest S.
Paul, Edward F.
Peach, Kenneth D., Jr.
Peach, Kenneth
Pergola, James
Perry, Harry
Perry, Paul P.
Peterman, Don
Peterson, Gus C.
Phillips, Alex
Phillips, Frank
Pittack, R. W.
Planck, Robert H.
Planer, Franz
Poland, Clifford
Polito, Gene
Polito, Sol
Pollock, Gordon B.
Pomeroy, Roy
Portalupi, Pietro
Poster, Steven B.
Powers, Len

ACTIVE CONT.
Priestley, Jack
Primes, Robert

Quaid, David

Ragin, David
Ramsey, Clark
Rath, Earl
Rawlings, Richard M., Jr.
Rawlings, Richard L.
Redman, Frank
Reed, Arthur
Rees, William A.
Rennahan, Ray
Rescher, Gayne
Reynolds, Ben F.
Richards, Jack L.
Richardson, Robert
Ries, Irving G.
Ries, Park J.
Roberts, Bob
Roberts, Irmin
Robinson, George H.
Roe, Guy
Roizman, Owen
Roos, Len H.
Rose, Jackson J.
Rosen, Philip E.
Rosher, Charles
Rosson, Harold
Rotunno, Edward Rio
Rotunno, Giuseppe
Ruiz-Anchia, Juan
Rush, Marvin
Russell, John L., Jr.
Ruttenberg, Joseph

Sable, Robert
Saizis, Ted
Saizis, Vincent
Salerno, Charles, Jr.
Salim, Peter
Salomon, Mikael
Savitt, David
Schneiderman, George
Schonenbaum, Charles
Schuler, Fred
Schwartz, Howard
Scott, Homer A.
Seeley, James
Seitz, John F.
Shackelford, James B.
Shamroy, Leon
Sharp, Henry T.
Shearer, Douglas
Shore, Richard
Shorr, Lester
Short, Don
Sickner, William A.
Siegler, Allen
Silver, John
Sintzenich, Harold
Six, Bradley B.
Skall, William V.
Slifer, Clarence
Smith, Arthur
Smith, Harkness
Smith, John (Jack)
Smith, Steve, Jr.

in his bag of lighting legerdemain. He had no top-lighting; it was all side-lighting. He had the lights remounted on hastily constructed see-saw devices. A small army of electricians was recruited. They manned the see-saw mounts and pushed down in unison, elevating the lights. Releasing their pressure, the lights descended. Against the scene's 220 feet the light rose and fell with rhythmic regularity — and for all the world, that ship was gently rolling against the sea's mirrored glitter.

When Ray June, ASC, returned to Metro-Goldwyn-Mayer studio last month after an absence of over a year, the occasion recalled some of the cinematographic artistry which June had developed and put into practice on that lot. "Mood," says June, "must be a dominant goal in any cinematographic undertaking."

When striving constantly for the proper pictorial mood, June believes that the cinematographer cannot escape humanism in his work. The bleakness of loneliness is not to be endured in motion pictures. If man is absent in the scene, consciousness and life are there, nevertheless. If the idiom of today has been utilized, we may all read in our common language an unblurred message in every cinematographic interpretation. There is no reason why this should not appeal to the masses, June points out. "In the tastes of the many is a fund of detail, suitable for expression as any subject which could be conjured in the mind. Detail is valuable to remind us that we walk upon the soil; but the true greatness resides in unrelated detail. Here the cinematographer shows his greatest ability in creating originality. And originality in cinematography is not only necessary and vital, but it is stimulating to the minds of the audience."

Charles B. Lang, Jr., ASC, who studied to become an attorney and then changed his plans to become a cinematographer, has, beneath his calm exterior, the same gripping vitality and dynamic energy that marks his cinematography. He won an Academy Oscar in 1934 for the photography of *A Farewell to Arms*.

A fellow artist says of him: "Lang never allows his subject to become drab and colorless. He endeavors at all times to place himself in the frame of mind of the audience so that his camera, instead of remaining the cold mechanical eye that it is, becomes the discerning eye of the artist: an artist who is able to see more than what appears on the surface, and gifted with an ability to capture and hold the throbbing undercurrent of life itself."

Lang's best cinematography has been in black-and-white. He uses what he terms "black-and-white color treatment," which gives the illusion of many and varying colors or "tones" in monochrome photography. This is done, Lang says, by proper utilization of lights to create illusions.

When photographing a mystery picture, he looks to the auroral perspective. He aims to leave the background dark at all times to create the illusion that someone or something is lurking unseen in the shadows. When making action shots, very often he will reverse the technique, lighting the background brilliantly so as to bring out the subject clear and precise.

Detail is an important factor in cinematography. Years ago Ernest Haller, ASC, earned the reputation of being a stickler for detail, and it has been an important factor in every picture that he has since photographed.

Once a shooting script is given to Haller, he treats it as a textbook and gives it careful study. Thus, when he begins actual work on the picture, the story is so vividly stamped in his memory that every situation and location is thoroughly familiar; it enables him to better visualize the picture as it should appear when completed, and to plan his photography accordingly. He carefully considers the characters in the story. Mentally, he sets his lights in the various sequences. He knows long before shooting begins the amount of light that is going to be necessary to enhance the various characterizations undertaken by the cast.

He consults with the art director and learns something about the sets planned for the picture, how they are to be dressed, and the colors, textures, and period of the furnishings — everything that has a direct bearing on the photography. For when a cinematographer has a clear picture in advance of his sets, the story and the characters, he is able to pre-plan his lighting and camera angles and come on the set fully prepared to do an inspiring job of photography.

Mood is a word that invariably comes to the fore whenever cinematography is discussed. Because motion pictures are basically a visual medium, it is the function of the camera to visually set the mood of the story or of a particular scene. Perhaps we should say it is the function of the director of photography, for what the camera records is the director of photography's concept of the mood of a scene, a bit of action or of the story as a whole, based upon the story script. He knows from experience that light and shadow and camera angles play a big part in setting the mood of the story, and he invariably seeks new and unique ways to employ these elements in every new picture.

George Folsey, ASC, president of the American Society of Cinematographers, in his discussions on cinematography, puts great emphasis on the importance of visual mood. To fully understand the mood of the subject or story, he says, the cinematographer must carefully analyze the script and visualize the story as it will appear [when it is] a completed motion picture. With this knowledge, he is better able to properly light and surround the players with backgrounds that will enhance and sustain the mood.

The background in a scene, he says, should never become more important visually than the subject playing against it,

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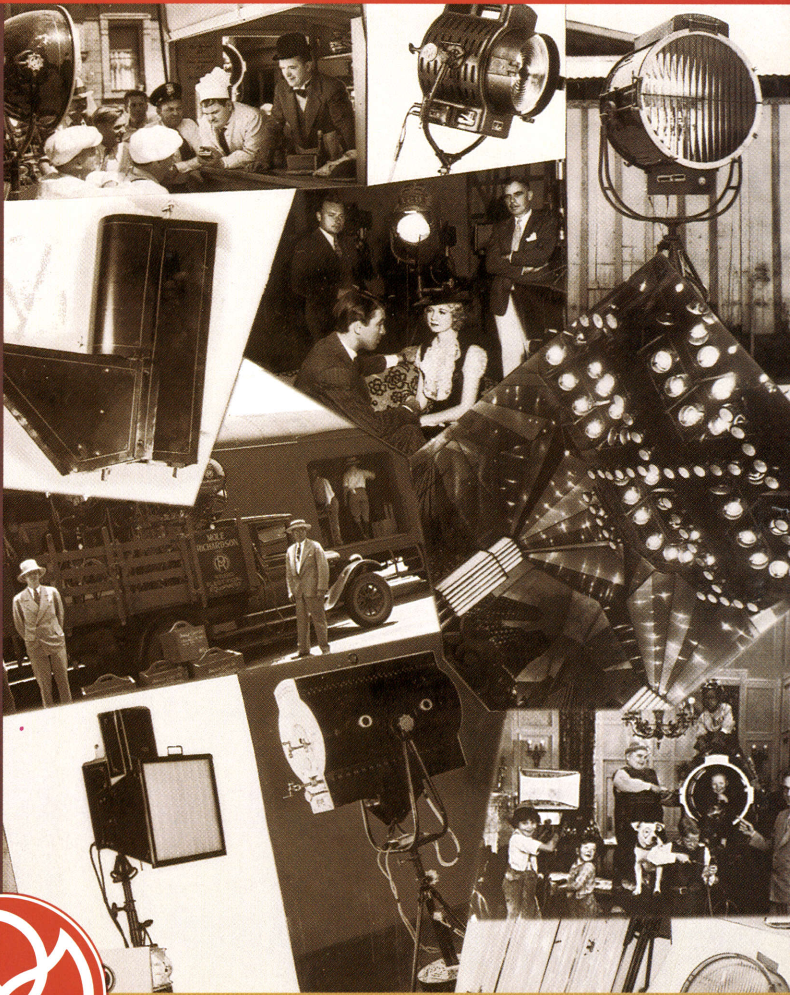

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and yet it should never be allowed to reach such a degree of unimportance that it no longer has any relation to the subject. To obtain the perfect balance between subject and background, Folsey never allows the latter to become monotone. Instead, he introduces contrast in shadows that blend this relationship with perfect harmony.

Folsey points out that shadows are a cinematographer's best friend. Utilizing them properly, he is able not only to increase or decrease the quality of his composition and display the subject (or star) to greater advantage, but attune the audience's mind to any mood he desires — keying the response to any emotional pitch. If the cinematographer keeps an attentive eye on the handling of shadows, he can prepare the audience for any desired dramatic tempo. He can also create a subconscious, emotional receptiveness on the part of the audience that greatly enhances the dramatic, vitalic and entertainment quality of the production.

One could go on indefinitely discoursing on the many methods that various cinematographers employ in obtaining their best shots, yet not give an absolute formula to follow in mastering the art of cinematography — an art in which everything is tangible and anything is possible. ▩

* * * * *

June 1957

Techniques of Hollywood Cinematographers

Second in a series of articles revealing the photographic concepts of some of Hollywood's ace cinematographers.

by Joe Henry

Hollywood directors of photography continue to set the pace, both for style and technical achievement, in the photography of motion pictures for screen and television. Most of these men are veterans of many years, having begun their careers in the days of silent films. Over the years they have had endless opportunity to experiment, improvise, and to observe and improve upon the techniques of their contemporaries. And, of course, they have always had the finest equipment — both cameras and lighting tools — to work with.

An Academy Award for cinematographic achievement doesn't necessarily indicate that the recipient is Hollywood's "top" director of photography, for in the film capital there are many "top" cameramen. Nearly all of the industry's veteran cinematographers are capable of turning out photography of Academy Award caliber, but besides skill and experience it often takes a bit of luck — luck in being assigned to the right story with the right director.

Years of experience have sharpened the skill of the veteran cinematographer and enabled him to develop an individual style in camera treatment and lighting that is given full opportunity for expression only on those rare occasions when a good story and a good director come along. These two elements do have a marked influence on the photographic outcome of a picture — especially today, when strict budgets of time and production costs invariably hamper artistic effort.

As we pointed out in the first article in this series, which appeared in the January issue, students of cinematography look to Hollywood's directors of photography for the guidance they need in the pursuit of their cinematographic studies. For the most part they must study the professional's work from the screen; for few directors of photography have found time to set down for book publishers the material necessary for the much-needed textbooks in this field.

One of the interesting techniques which is being employed with increasing regularity is that of projecting colored light into a scene in a color production for pictorial accent or to point up an atmosphere or mood effect. Ray Rennahan, ASC, was one of the very earliest to employ this innovation in Technicolor photography.

"The use of colored light in color productions," Rennahan says, "is a phase of motion picture lighting which has no parallel in black-and-white cinematography. The means, of course, is simple: merely placing gelatin screens of the desired color in front of the set lamps. This projected color may be confined to a small area, or spread over the entire set, as the circumstances may dictate. Obviously, this technique offers many opportunities for startling pictorial and dramatic effects, but it should be used with restraint. We have found, for instance, that projected color is best used on sets and props and only sparingly on players, except perhaps in certain dance numbers."

Projected color, according to Rennahan, has been and will always be an ace-in-the-hole for the cinematographer. When a set is predominantly monotone or when a scene needs an added "kick," projected color can be the answer, he says.

Since 1917, when he first photographed Mary Miles Minter at the old Vine Street studio of Famous Players, James Wong Howe, ASC — who won his first Oscar last year for the black-and-white photography of *The Rose Tattoo* — has been giving deep, philosophical thought to his profession. His camera technique is founded on fundamentals amazingly well-defined, sharply stated and progressive.

"The true artist of cinematography is subtle, and always conceals the effort," says Howe. "He takes his technical perfection for granted, and it becomes but a means, not an end in itself. It is as the concert pianist who plays compositions requiring extreme technical skill and impresses his audience with his exhibition of mechanical deftness, compared with the artist who, with no noticeable exertion to [distract] his audience, makes sweet music."

Screen photography should never be obtrusive, Howe adds; perfection should be so unassumingly perfect as not to pull audience attention from the unfolding drama. "It should be as a well-dressed, cultured woman — reticent, confident, unobtrusive in her appearance. In short, photoplay cinematography should not be conspicuous either for being overdressed or undressed," he emphasized.

Howe's efforts are always to make a scene look humanly and naturally real, rather than [to provide] a demonstration of the scientific perfection attained by chemists. With the new, faster film and lenses available today, scenes can be photographed in what amounts to "existing light" — a candlelit table actually photographed by the light of candles, thus giving truthfulness and fidelity of reproduction from life to the screen.

The Howe approach is to photograph scenes rather than talking people — to photograph the story rather than just the sets and the actors. Howe, as with so many of his top-flight contemporaries, has rare creative courage; he dares to do things others have never attempted or have purposely avoided.

Peverell Marley, ASC, is another director of photography with specific techniques and philosophies in the art of cinematography. An Academy Award winner and a veteran of many years on Hollywood sound stages, Marley has one ruling passion: never to photograph the same type of scene the same way twice. "Like a musical composition," says Marley, "every picture has a 'key.' That 'key' must be maintained throughout each and every scene. This is the responsibility of the director of photography, and no one else."

Individual expression plays a vital part in photoplay cinematography, Marley says, adding that the cameraman must be thoroughly convinced of a scene before he can express it properly and convincingly through the eye of the camera.

New faces, he says, demand careful experimenting in lighting and photography. The cameraman must carefully light the new face and photograph it from various angles in order to determine how the player should be handled when he or she goes before the camera on an actual production. Stage lights can bring out structural deficiencies in facial contours, and exaggerate the poorest defect, but through proper handling of the lights, these same deficiencies can be nullified and the face enhanced to advantage. This, said Marley, is one of the most important functions of the director of photography; more than one screen star owes his or her popularity to a specific photographic style created by a director of photography. It is the reason why many stars insist on a certain cameraman to photograph them when cast in a new production.

Lighting for mood is a dominant objective of Marley's whenever assigned to a production in which mood can enhance the telling of a story. Any emotion, he points out, can be accentuated by lighting.

"Cameramen, like artists," he says, "are stylists. Each has his own individual style and manner of photographing the key players on the set. The individuality of the actor can be greatly enhanced by the skill of the man directing the camera."

During a career that has run the cinematic gamut from the old-time ortho-film "silents" to today's CinemaScope spectaculars, Karl Struss, ASC, has proven himself both a technician par excellence and one of the industry's most versatile directors of photography. He shares with Charles Rosher, ASC, the distinction of being the winner of the very first Oscar awarded by the Academy for achievement in cinematography. That was back in 1927, and the picture was *Sunrise;* Struss and Rosher collaborated on the photography.

"If modern-day dramatic cinematography may be said to belong to any school," Struss has said, "it would be that of 'idealized realism.' With cinematography today we must strive to convey an impression, not alone of actuality, but of a *perfected* actuality. Our aim is to show players and settings, not merely as they are, but as the audience would like to see them. Each scene must not only appear realistic, idealized to the extent at least of minimizing any disturbing elements within it. Very few players, for instance, have absolutely perfect complexions; and still fewer approach absolute perfection of line and contour. Therefore, since audiences quite understandably prefer to see their favorites presented favorably on the screen, it is the director of photography's duty to minimize physical imperfections just as a portrait photographer must strive to please his clientele by presenting his subjects both faithfully and favorably — if not flatteringly.

"In attempting to do this, the director of photography's technical opportunities are somewhat restricted as compared with that of the portraitist. Where the latter has almost endless opportunities for controlling results through photographic treatment of the negative and print and through retouching, the cinematographer's sole means of control is in the lighting and photography. For him, the process of development and printing are virtually automatic, and permit only very limited control. Thus the picture,

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scene, or composition must be right in all respects before it is shot. Make-up, diffusion, lighting, and carefully chosen camera angles are the means by which this perfection is attained," Struss concluded.

As we study each cinematographer's work on the screen, it becomes evident that each man's technique is as individual as he is himself. As it has been pointed out before, just as no two painters employ the same techniques in putting a picture on canvas, we rarely find two directors of photography who think the same and work the same in photographing a motion picture. Each cinematographer's "style" is the result of his innate ingenuity, imagination, and his insatiable desire to experiment and perfect his work. Out of these things have come the fine art of cinematography we know today.

* * *

September 1966

"Natural" Lighting for Interior Sets

Smaller, brighter studio lamp units, combined with faster emulsions, are making possible ever more realistic lighting effects.

by Arthur Miller, ASC

For many years we cinematographers were rather boastful, telling ourselves and others about the natural light-effects we were obtaining in our interior scenes. But it seems to me that for the most part we were only fooling ourselves. It was not until faster negative filming stocks became available to the cinematographer that he was able to say with any degree of honesty that he was creating natural lighting. Previously, while our ideas and intentions were of the best [kind,] technical limitations made it utterly impossible to do more than approximate most of the natural effects we wanted.

When we had nothing but relatively low-speed emulsions to use, it was only natural that all interior lightings had to be more or less artificial. The distorting factor was of course the high illumination-level necessary to produce an exposure on the film. Consequently, we had to use our light, so to speak, in large packages. No matter how we tried to play our lighting for source-light effects, the actual illumination had to come from a host of high-powered lamps lining the set on the overhead lamp-rails and hemming in the actors on the stage floor. We were forced to paint our pictures, therefore, with an over-large brush which was incapable of giving us the delicate touches need for truly natural effects. In innumerable instances, the light-sources powerful enough to produce a photographically discernible light-effect would be so bulky that they could not be crowded into the physical space from which a beam must shine to produce that effect, while a unit small enough to be used at that point — even if such units had been available — would have been too low-powered to create any photographic effect. As a result, we compromised, and the result, inevitably, was artificial-looking.

With the arrival of faster film and coated lenses, it became possible to work at vastly lower and more normal light levels. This made practical the use of smaller lighting units which opened a whole new concept and method of arriving at that which all cinematographers were striving for: "natural effects" to further point up dramatic scenes. Lighting units in small packages began with the "match box" which was used originally only for the purpose of reflecting a catch-light in the eyes of the actors, especially in close-ups. As it began to be used for other purposes, the Dinky Inky, another small unit, came on the scene, as well as the 115-watt peanut tube that could be hidden behind table lamps, wall brackets, and [so forth]. Before the days of fast film, such lamps would have been too absurdly small to have any practical value. Today they have become the fine brush by means of which the cinematographer can paint precise light-effects with the small delicate brush-strokes he has long needed.

For practical illustrations of some of the methods of using these small lighting units for precision lighting, I have turned to specific scenes from pictures I have photographed employing these units while they were in their early development. In using them, I am fully aware than other cinematographers may well have even more striking examples of these methods of lighting; I do not wish to slight them, but I am of course most familiar with the scenes I have lighted and photographed myself.

FIGURE 1 shows a scene from *The Mark of Zorro*. In lighting this scene, there were three paramount considerations. First, we had to make it logical that the face of the pseudo-monk, actually "Zorro" (Tyrone Power), should remain darkly invisible to the heroine, Linda Darnell; yet at the same time, when the "monk" turns during a later phase of the action, his face must be visible to the audience. Second, Miss Darnell must be so lighted as to present her beauty attractively. Third, we had to light the set itself in such a way as to be compositionally attractive, and to make the lighting on the two people believable.

The accompanying diagram shows how this scene was lighted using three 500-Watt Baby

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Keglights and six 15-Watt "Dinky Inkies." Baby Keg No. 1 provided the key-light. It not only illuminated Miss Darnell, but also provided a logical reason for keeping Power's face heavily shadowed beneath his monk's cowl. Baby Keg No. 7, placed high on the lamp-rail, provided the necessary backlighting on Miss Darnell and on the railing behind her, to separate them from the background. Baby Keg No. 6, also on the overhead lamp-parallel, provided additional top-backlight on set and players from this necessarily important angle.

Dinky Inkies Nos. 2 and 3 were concealed behind the flowers on the altar in the background, and were directed upward along the wall. It will be noticed that their beams fall *in front of* the candlesticks at the altar, throwing their shadows against the wall — a logical and necessary effect, since these candles were not lighted. On the other hand, Dinky Inkies Nos. 4 and 5, which were concealed behind the flowers at the smaller altar, cast their flooded and diffused beams on the wall *behind* the candlesticks and on the statue. This again is logical, for these beams simulate the natural, visual effect of the light from these lighted candles. Now that we could use these small lamps, which can be concealed so easily within the scene, we could at last get away from the unnatural method of creating such lighted-lamp effects by means of a concentrated beam from a spotlight on the opposite lamprail, which inevitably defeats its purpose by also casting on the back-wall the shadow of the light-fixture which is supposed to be producing the illumination! Dinky Inky No. 8 performs a similar service for the candles before the figure directly behind Miss Darnell, while Dinky No. 9 completes the lighting by providing a soft "filler-light" in that corner of the set.

FIGURE 2 is another candle-light scene from *The Mark of Zorro*. In this, the problem was to provide a convincing effect of candle-light (with a trace of waning daylight outside the window in the left background) and yet provide the necessary illumination for the action — melodramatic swordplay — and to strike the correct visual mood for this type of action.

Again the key-light was a 500-Watt Baby Keglight (No. 1) shining across the table and strongly illuminating the frightened man in the chair. It also served to illuminate part of the back-wall behind him, and to throw upon it a pictorially strong shadow of man and chair. Baby Keg No. 2, placed high on the lamp-rail, served a similar purpose for the masked swordsman, "Zorro," and created a strong highlight on the white back-wall, against which his dark garments stand out prominently.

The alcove in the background was illuminated by lamp No. 3 — a heavily-silked broad — while the effect of pale sunlight coming through the window in the background, and projecting its shadow-pattern on the far wall at the left, was produced by a heavily-diffused arc spotlight placed outside the window.

It will be obvious that since "Zorro" stands leaning against the tall candlestick, the chief illumination on his face and figure should come from that source. It actually came from lamp No. 5, a Dinky Inky, placed on the floor slightly nearer the camera than the candlestick, and concealed from the lens by the table and chair. Similarly concealed behind the chair, another Dinky, No. 6, with its beam flooded and diffused, completes the lighting by lightening the shadows on the corner behind the players.

In FIGURE 3, we have another candlelight effect, this time played in a more somberly dramatic mood, for a scene from *Brigham Young — Frontiersman*. The principal source of illumination appears to be the candle on the table. This was simulated by Dinky Inky No. 1, placed on the table, concealed behind the tall hat, which threw its beam strongly up into the face of Dean Jagger, playing Brigham Young, and projected his shadow strongly against the back-wall. A second Dinky, similarly concealed behind the hat, throws its more diffused beam against the other wall, also simulating the candle's light. Dinky No. 3, on the floor at left, continues this effect, and silhouettes the man in the left foreground. No. 4, a Baby Keglight placed well to the left, outlines the man in the foreground on that side, and aids in lighting Jagger and the wall behind him. Another Baby Keg on the back lamprail is crossed to illuminate the two men at the right.

FIGURE 4, also a scene from *Brigham Young — Frontiersman*, is another example of the simplicity of dramatic effect-lighting with modern tools. The principal source of the light would obviously be the oil lamp suspended over the table. This was made the source by placing a Photoflood bulb inside the lampshade at "A" and reinforcing this source with lamp No. 1, a Baby Keg placed overhead.

The strong key-lighting on the group of three by the left window — especially centering on Dean Jagger, was provided by lamp No. 2, a Dinky Inky, placed on the table and concealed from the ground. The equally strong lighting on the other man seated behind the table was provided by Dinky No 3, placed on the table in much the same way and concealed from the lens by the man standing in the foreground. Lamp No. 4 — another Dinky — gave the rim-lighting necessary to make the man standing at the end of the table stand out well from dark background. Lamp No. 5, a diffused arc spotlight, provided the effect of faint light coming in through the left-hand window while broads Nos. 6 and 7 illuminated the backing outside the window.

But Dinkies are by no means the only units which can at times be concealed within the scene. FIGURE 5 illustrates this. It, too, is a scene from *Brigham Young*, a stage exterior night-effect. In this the principal light-source is of course the fire. To begin with, two No. 2 Photoflood globes were placed behind the fire; the flickering firelight-effect was created by the usual gadget which burns an oil-soaked wick in a metal pan directly behind these lamps, so that the smoke interrupts their beams to produce the requisite flicker.

The chief light-source on the principal players in front of the wagon was a Baby Keg No. 1, placed low on the ground by the fire, and concealed by the men sitting in the left foreground. Lamp No. 2, a Dinky, similarly placed, illuminated the man standing at the left, while No. 3, another Dinky, highlighted the two men sitting (left) by the fire. Lamp No. 4, a Baby Keg placed high on the lamprail, at the back left, was used to rim-light the players at left and center-foreground. Extremely soft front-lighting was provided by lamp No. 5, a heavily-silked broad.

The background was highlighted by lamp No. 6, a Baby Keg placed high at the right and crossed, while the backing was illuminated by No. 7, another silked broad.

The point which I hope these somewhat obvious examples will make is this: that these natural source-lighting effects, together with many similar ones they will suggest, would have been absolutely impossible previous to the introduction of today's high-speed emulsions and the smaller lighting units the speed of these films made possible. I am very sure that many scenes closely paralleling the photo-dramatic requirements of the ones discussed have come up frequently in the past experience of almost every cinematographer. If we look back at them, we can see from our own experience just how badly we were hampered by the technical limitations of the materials with which we then had to work — how we were forced to approximate the "natural" effects we wanted, rather than obtaining them in actuality.

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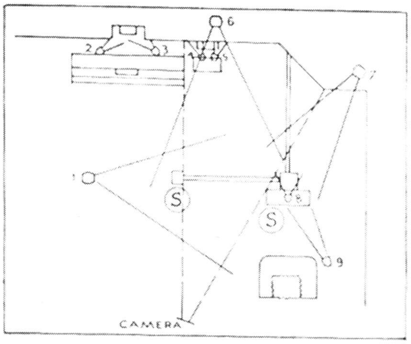

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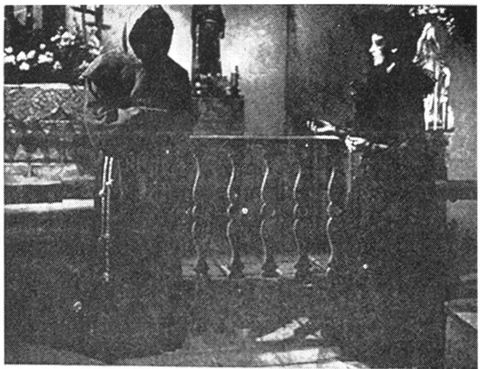

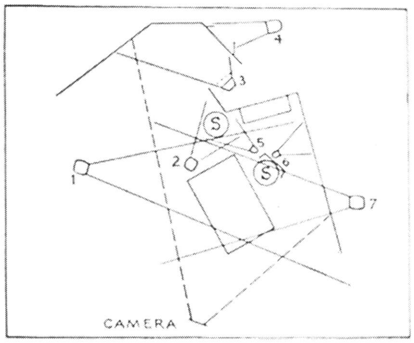

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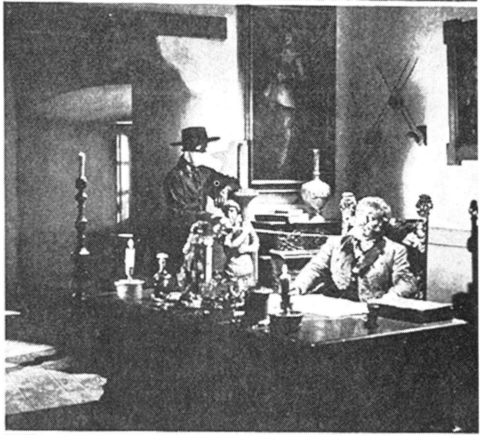

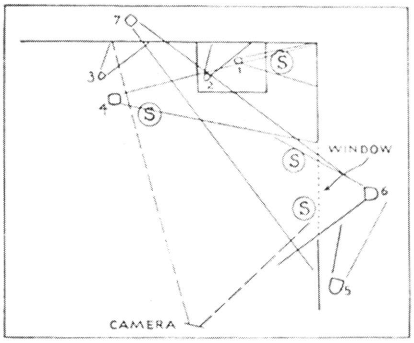

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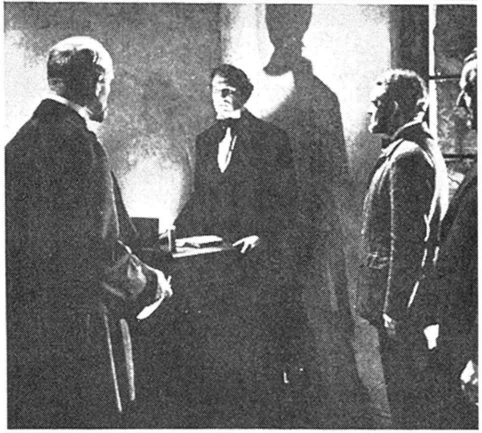

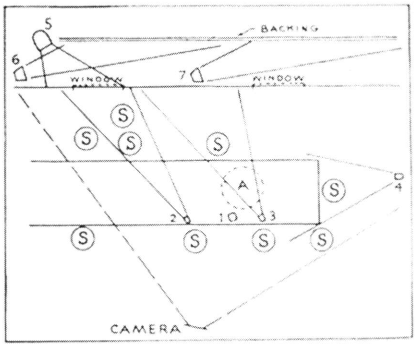

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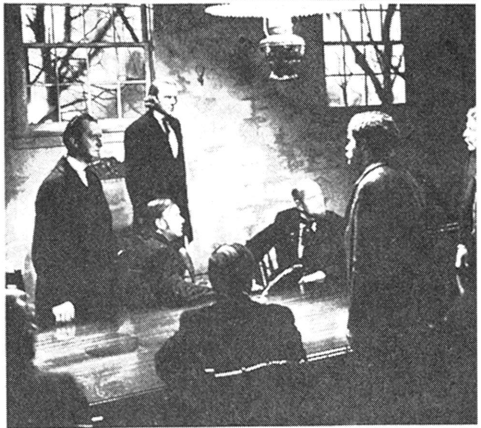


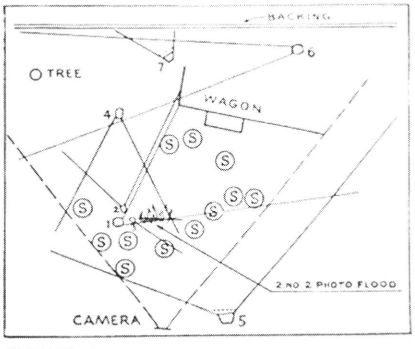
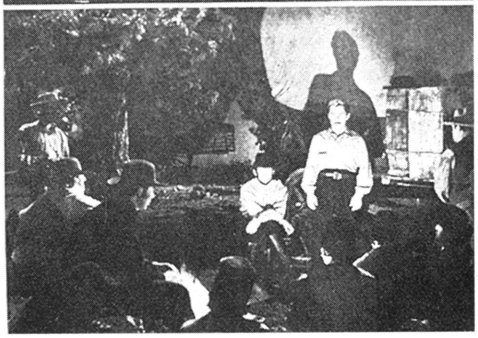


FIGURE 4



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Mason, Kenneth M.
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Maynard, John H.
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Nettman, Ernst
Newson, Bernard
Nicholson, Meredith M., Jr.
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Nolting, Fred
Norwood, Capt. Don
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O'Brien, Stacey
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Oakley, Norman F.
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Oster, Emil

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Parker, Larry
Parker, Michael
Parker, Warren
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Riley, Robert
Ringer, Robert J.

rather interesting thought strikes me. Cinematographers have always looked forward to the day when they could get truly natural light-effects, and work at substantially natural levels of illumination. Today, thanks to these modern technical developments, we have come incredibly close to being able to achieve this long-sought goal. While average interior light-levels are of course subject to considerable variation, due to differences in the methods of individual directors of photography and to the processing standards of the different laboratories which handle their film, a surprising majority of cinematographers are working only slightly above normal practical room-lighting levels. As a matter of fact, I am informed that some cinematographers who work under conditions permitting exceptionally low light-levels have at times had to wire the practical lights in their sets through dimmers in order to cut down the intensity of these normal lamps to match the levels of the photographic lighting!

Finally, it should be pointed out also that this remarkable development has had, in addition to its artistic benefits, very definite technical and economic advantages as well. By eliminating the need for high illumination levels and the larger and bulkier lamps necessary to obtain them, we were able, at the same time, to eliminate the necessity for many of the makeshifts formerly necessary to make these larger lamps adaptable to the fine, precision lighting these effects demand. I doubt if the precise difference in either time or production cost has been accurately estimated (or for that matter, whether it could be). But it must be obvious that the time formerly spent in figuring out how to position a large lamp so it would produce some of these precision effects just discussed, without interfering with any other phases of the lighting on people or set, and then confining its beam to the exact small area where the light would be needed, by means of goboes, flags, shades and similar auxiliaries — to say nothing of reducing it to the right intensity by means of diffusers and the like — would be very considerable when compared to the modern method of simply concealing a Dinky within the scene at whatever point might be necessary to produce just the right effect.

Summing the matter up, we can consider ourselves most fortunate that we can today reap the benefits of these advances in film, lenses and lighting equipment, which on the one hand make it possible at last to light with the precision necessary to obtain really natural lighting effects, and on the other, to greatly simplify and expedite the work of the director of photography and his stage crew.

The introduction of small incandescent lighting units some 25 years ago, made possible by the development of faster film emulsions, constituted a significant revolution in the technology of motion picture lighting.

Today another such revolution is in the making, brought on by the introduction of quartz-iodine lamps. These miniaturized, high-intensity units provide a means of lighting relatively large areas on location or in the studio by means of highly portable, compact equipment.

Quartz-iodine (or more accurately, "Tungsten-halogen") lamps are, so far, in the same stage of advancement as were the small incandescent units when they first appeared. Much remains to be done by way of improvement in relation to higher wattage lamps, better fixtures and more precise means of controlling the light — but such improvements are already on the way. It is a certainty that when they arrive they will lead to a genuine breakthrough in the art and science of cinematography.

February 1969

ASC Celebrates Golden Anniversary with Gala Ball

Festivities herald end of Society's first half-century, and beginning of its second.

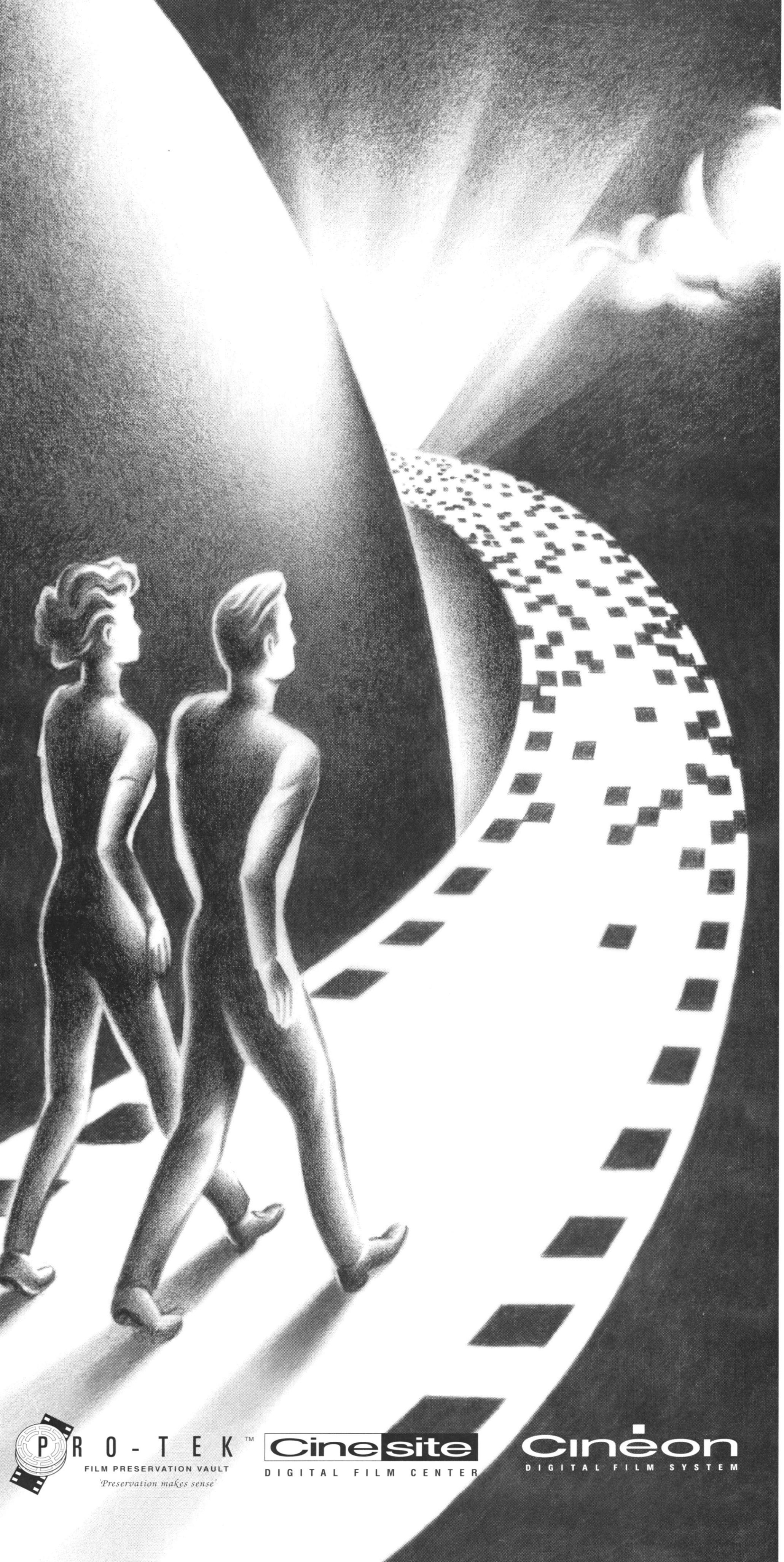
by Herb Lightman

A festive spirit pervaded the International Ballroom of the Beverly Hilton Hotel on the evening of January 17, as ASC members, their friends, and luminaries of the film industry gathered at a formal dinner-dance to celebrate the 50th Anniversary of the American Society of Cinematographers.

Chairman of the gala event Charles G. Clarke, ASC, his gracious wife, and co-chairman Sol Halprin, ASC, had spared no effort to make this affair one long to be remembered, and the magnificently decorated ballroom bore witness to their diligence and taste.

Early arrivals chatted in the elegant outer bar or danced to the rhythms of Manny Harmon's orchestra before sitting down to a gourmet dinner at tables of ten.

As the flames died down on the *Cherries Jubilee Flambé* and the elevator dance floor of the ballroom rose to platform height, ASC President Hal Mohr took charge of the proceedings. A droll and dapper host, he sketched, briefly, the 50-year history of ASC, told of its continuing research and philanthropic activities within the motion picture industry and acknowledged the many congratu-



For 75 years.

Members of the American Society of Cinematographers. Have been unrelenting in their dedication. To advancing the art of filmmaking. They have created a unique heritage. Which grows with each generation. At this memorable milestone. As we approach a new century. We pledge our continuing admiration and support for the principles of ASC. We will be your partners. As we have from the beginning. In exploring new frontiers with no boundaries and unlimited horizons.

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Russell, John
Ryder, Loren L.

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Samuelson, David
Samuelson, Sydney
Sandberg, Dan
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Sawelson, Mel
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Vetter, Richard
Vincent, Lou
Violante, Joe
Virnig, Jerry
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Whitlock, Albert J.
Whitmore, Ralph D., Jr.
Wilkinson, James R.
Williams, Allan L.
Williamson, Geoffrey
Williford, E. A.
Winchester, Ted
Wolfe, Wallace V.

Yarbrough, Jan
Young, Robert

Zaidi, Nazir
Zois, Michael

latory telegrams which had poured in, among which was one that read:

> *To the ladies, gentlemen and guests of the American Society of Cinematographers:*
>
> *My hearty congratulations on achieving your 50th Anniversary. You, as Directors of Photography, have contributed so much to the world in the areas of information and entertainment. My very best wishes for your success in the years to come.*
>
> *Sincerely, Richard M. Nixon*

Mohr then read a congratulatory telegram from the ASC's colleagues in the British Society of Cinematographers and expressed his pleasure at working currently with one of its outstanding members, Jack Hilyard, on the Alfred Hitchcock production of *Topaz* at Universal Studios.

He also acknowledged the concurrent 50th Anniversary of the Mitchell Camera Corporation and paid special tribute to ASC Honorary Member George A. Mitchell, inventor of the famous world-standard studio camera which bears his name. Mr. Mitchell was present with his wife and son, a motion picture officer in the U.S. Air Force.

Hal Mohr then introduced a special friend of ASC, Academy of Motion Picture Arts and Sciences President Gregory Peck. In sincere and informal acknowledgement, Mr. Peck said:

"If I may equate myself with the Academy and its 3,000-plus members, I wish to convey their greetings to you, on the 50th Anniversary of your wonderful organization. We congratulate you and we express our affection and respect for you, and for what you represent to the art of motion pictures. I've met here tonight a number of old friends, the Picassos and Matisses of the art of cinematography. Some of them I haven't seen for years, and I can't resist departing, for a moment, from my role as official spokesman for the Academy, to say hello to them, just as a working stiff who is particularly grateful to such people as Karl Struss, Russ Metty, Charles Rosher, Sam Leavitt, Joe Ruttenberg, Arthur Miller, Charles Lang and others, the foremost cinematographers of our time, with whom I've had the great fortune to work. They're all out there somewhere, as is Leon Shamroy. Thank you, Leon. Thank you, George Folsey and Russ Harlan and the others out there who have helped me survive in this business for so many years. Congratulations again, and thank you for this wonderful evening."

Then it was time to honor the four living Charter Members of the American Society of Cinematographers: Victor Milner, Charles Rosher, L. Guy Wilky (all of whom were present) and Arthur Edeson, who, unfortunately, was prevented by illness from attending. On behalf of the Society, Hal Mohr presented all of them with gold pins bearing the ASC emblem.

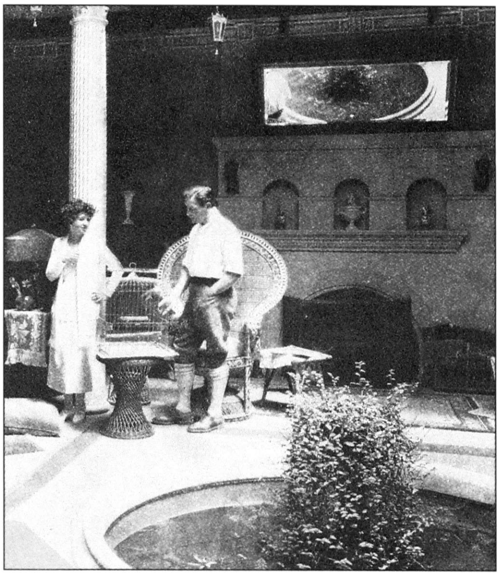
The official amenities of the evening having been concluded, Mohr then turned the microphone over to the ASC's young and talented attorney, David Fleming, who took charge of the entertainment portion of the evening. Proving himself as nimble a Master of Ceremonies as he is a legal eagle, Fleming made with the snappy patter, evoking appreciative laughter and applause from the crowd. He introduced *chic chanteuse* Dodie Stevens, who did several numbers. Then came ASC Associate Member Edgar Bergen who, though caught with his dummy down, regaled the audience with his own special brand of witty dialogue. Songstress Shirley O. Mills, a bundle of verve, wound up the entertainment by practically sitting in Arthur Miller's lap at ringside and belting out a personalized parody of "Won't You Come Home, Bill Bailey?" It was a laugh a minute.

The Gala affair at the Beverly Hilton climaxed a fortnight of fond tribute to the ASC and its founding members. Both the *Los Angeles Times* and the *Herald Examiner* had published comprehensive features on the Society, as had *Variety* and the *Hollywood Reporter*. The special 50th Anniversary Issue of *American Cinematographer* had appeared, immediately becoming a collector's item. Mayor Sam Yorty had proclaimed Friday, January 17, 1969 as ASC Golden Anniversary Day in Los Angeles.

Entering its second half-century of "Loyalty-Progress-Artistry," the American Society of Cinematographers would have something fine to remember.

* * *

The Clubhouse in 1924



Interior photo from a 1924 *Photoplay* magazine spread on the home of silent film star Conway Tearle and his wife Adele Rowland. Seven years later the house would be purchased by the ASC. Note the marble goldfish pond.

June 1971

On Location with The Godfather

On the sidewalks of New York (and Hollywood and Sicily), rules are broken as offbeat photographic techniques are applied to filming of best-selling novel.

by Gregg Steele

En route to farther-off places, *American Cinematographer* Editor Herb Lightman stopped off in New York to observe filming on the Paramount production of *The Godfather*, adapted from Mario Puzo's best-selling novel and directed by Francis Ford Coppola.

To be photographed mainly on locations in New York, Sicily, Hollywood and Las Vegas, this production is the first to use the new Mark VI Cinemobile. Originally, at Paramount's request, this new model of a studio on wheels had *The Godfather* painted on its sides in gigantic letters, but the identification attracted such huge crowds of onlookers that the inscription had to be painted over.

Filming observed by Lightman included various locations on the streets of Manhattan (including the exterior of Bellevue Hospital), plus an important sequence on Staten Island, where several large houses had been enclosed by a stone wall to simulate the Mall, stronghold of the gangster chieftains who are the main characters of the story.

In the following interview, Director of Photography Gordon Willis explains his visual approach to this particular assignment and details some of the unusual and rule-breaking techniques which he is utilizing:

AC: I understand that you are using a rather unusual photographic style in this film. Can you tell me a bit about the effects that you're after and the mechanical means you're using to achieve them?

Willis: Yes. When I first received this assignment I thought about all kinds of sophisticated ways to introduce this and that, but I finally came to the basic realization that this film, especially because it's a period film, should be kept mechanically simple — and Francis Coppola feels the same way about it. In all of the films I've shot I've tended to do the same thing philosophically — but none of them look the same, even though the attack is the same.

AC: If I understand your meaning correctly, you are saying that you can arrive at a number of different results by using the same basic philosophy as a common denominator. If you were to sum up that philosophy in a sentence or two, how would you state it?

Willis: I think I would say: "See what you're looking at. Don't walk into a situation and re-manipulate it. Look at it!" There are too many people in this business who find a location that is exciting and then instantly proceed to rebuild it photographically. They forget why they chose that location in the first place. I don't mean that you shouldn't light anything. I simply mean that you should light it so that you still have what you came there to get. It may mean that you won't have to do any lighting at all. But then again, it may take you quite a while to work it all out so that it still looks the same. But see what you are looking at. Retain what's there.

AC: In applying your philosophy to *The Godfather*, what kind of style have you arrived at and what are the mechanics involved?

Willis: In this particular case, I felt that the film should be brown and black in feeling, and that occasionally it should be hanging on the edge from the standpoint of what you see and what you don't see. A lot of cameramen work to increase the quality of an image, but in this specific case I'm working to decrease it. Most cameramen work to make the image as structurally sound and smooth as possible, but it's been my personal feeling that this isn't the best way to handle a contemporary story — and now that I've thought about it, I'm convinced that it's absolutely the wrong way to photograph a period story.

AC: Translating that conviction into sheer mechanics in this case, what are you doing mechanically to follow it through?

Willis: I've photographed all of the material so far — and will continue to photograph it — so that the negative is not a super-heavy, thick type of negative. Theoretically, the negative is about one-half stop underexposed, but it's even more than that, according to the way that I rate the Eastman color negative. But getting back to the point, I feel that this film should have a brown look to it, with occasionally a bit of that 1945 blue-black in it. I think it should look like a newspaper photograph in bad color — a black-and-white print out of the *New York Times*, with a little color introduced.

AC: Something like a bad rotogravure?

Willis: Right! That's exactly what I mean — but it should be well thought out, so that the effect means something on the screen. Before we started shooting, I sent Technicolor some material and told them to print it several different ways in terms of dye-transfer and duping, so that we could find the area in which it would print well according to what we've just discussed. They were very cooperative and came up with some nice things. When I got the material back I picked one dupe that I

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Disney, Walt

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MacDonald, David
McCandless, Capt. Bruce
McNair, Dr. Ronald
Mitchell, G. A.

Peck, Gregory
Prevedel, Barbara

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1921-1923
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1926-1928
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1928-1929
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1943-1947
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Charles G. Clarke
1950-1951
Ray Rennahan
1951-1953
Charles G. Clarke
1953-1954
Arthur Edeson
1954-1956
Arthur C. Miller
1956-1957
George Folsey
1957-1958
Burnett Guffey
1958-1960
Walter Strenge
1960-1961
Lee Garmes
1961-1963
William Daniels
1963-1965
Hal Mohr
1965-1966
Ray Rennahan
1966-1968
Sol Halprin
1968-1970
Hal Mohr
1970-1972
Sol Halprin
1972-1974
Ernest Laszlo
1975-1977
Lester Shorr
1977-1978
Linwood G. Dunn
1979
Winton Hoch
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William Fraker
1981-1982
Harry Wolf
1983
Ralph Woolsey
1984
William Fraker
1984-1986
Stanley Cortez
1987-1988
Harry Wolf
1989-1990
Leonard South
1991-1993
William Fraker
1993-1994
Victor Kemper

thought would do the job and, hopefully, when the shooting is finished, the entire film will be duped in that manner, using the dye-transfer process, and it will look right.

AC: What is your feeling about visible grain in this particular picture?

Willis: I feel that the grain structure should be more prominent than usual. Now, this is nothing new. A lot of people have said: "I want everything to look messy." But there is a very thin line between "different" and "lousy." I mean, you can get so abstract that you have no point of view, and everything you do is really meaningless. It's just sloppy work and nothing more. I'm not a believer in using grain structure and things like that to cover up something that is essentially not good to begin with. I believe that if you start at the bottom and make everything very good — and then use such things as grain properly — it'll work.

AC: This unusual "bad rotogravure" visual style we've been discussing — do you intend to use that consistently throughout the entire picture?

Willis: No — it wouldn't be right to do that, because the action of the story moves from New York to Hollywood to Sicily. This brown, sort of broken-down quality I've described relates to the New York sequences, but not to those that take place in Hollywood. I plan to emphasize the contrast between the two locales by giving the Hollywood sequences a cleaner, crisper, sort of West Coasty, California quality — which should be a bright, hard image. In juxtaposing the two — in cutting from New York to California — there should be a very definitive difference in relation to the atmosphere and the people.

AC: How then, do you intend to handle the Sicily sequences?

Willis: In terms of the dramatics of the story, the feeling of New York carries over to Sicily — but not exactly. It will be brown, but smoother. The color quality will be the only thing I'll carry over to Sicily. In other words, when we deal with the family in New York, it's like a broken-down, melted-down Sicily — but the essence of it is there. Sicily will be olive and nice and warm and sunny.

AC: What mechanical method do you intend to use in order to achieve that effect?

Willis: Well, I've never been to Sicily, but after doing some research I've arrived at the conclusion that the Sicilian sequences should be very rich and very brown — with a very creamy kind of feeling. It seems to me that the way to attack a thing like that is to over-state it. So, I plan to photograph Sicily through rather heavy chocolate brownish filters. Brown is a nebulous color, but there are times when it can be very beautiful on the screen because it tends to make everything very rich, in a monotone sort of way. It desaturates the primary colors. I plan to photograph all of the Sicilian exteriors that way.

AC: What about the interiors?

Willis: I'll use chocolate filters, but they won't be nearly as heavy as the ones I use outdoors. I've had a series of gelatin filters made up in varying densities of the chocolate tone, and I'll use the lighter ones inside. This should give me a good relativity between the interiors and the exteriors in Sicily.

AC: You mentioned earlier something about the way you rate the Eastman color negative — implying that this is different from the normal rating. Can you explain that?

Willis: Well, for example, if you take a roll of Eastman color and expose it under the conditions that Eastman recommends — which is ASA 100 for interiors and ASA 64 for exteriors — you'll get very nice photography and it will certainly print well. But Eastman has built a margin for error into the film. It allows for my error, for the laboratory's error, for everybody's error. It's right for Eastman to build the material like that, because if they cut it too close a lot of people would make mistakes in using the film. So I can understand and appreciate why they rate their film the way they do. However, I started out by shooting the film at the established rating several years ago. Then I began to experiment with lowering the ratings. First I dropped it one stop and rated it at ASA 200. I had the lab push it an extra stop and everything looked fine. Then I exposed it at ASA 200 and had them process it normally, without any pushing. When I saw it on the screen I thought it looked terrific. I mean, it was a lovely image and I liked it. So, I shot all of the interiors for *The Landlord* and for *Loving* with the film rated at ASA 200 and no pushing in the lab. The result has a very specific quality.

AC: But what did you mean before when you said that you would be one-half stop underexposed, according to your method of rating the film?

Willis: What I meant was that right now I am using a variation of the formula. I'm exposing at ASA 250, and having the film pushed one stop in the lab, which means that, theoretically, I'm underexposing one-half stop. The truth of the matter is that I like the look of that result. It appeals to me because the film becomes more translucent. You can see through the colors, rather than having them just sticking on the screen. Because the fog level is raised slightly in the pushing, the material tends to have a kind of foggy, not-quite-there look which, at times, is quite nice.

AC: Doesn't this method leave very little latitude in printing?

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WILLIS: Exactly. It means that once I've got the basic quality I want on the negative, the lab can do very little to jerk it around. I can expose it for the way I want it to end up on the screen. Some people complain that the way I expose it they can't do this and they can't do that with it. They can't print it up, for example — and that's exactly why I expose it that way. Film material is designed to be printed in one range and one range only. I don't like giving a lab the flexibility to print it up and down, because sooner or later someone, somewhere, in some little room will decide that it should be a little more this way or that. He'll straighten it out for you. Everything will be just perfect — and it will be a disaster. So, I don't like to give the lab a full negative for two reasons. The first is an aesthetic reason; I don't like the way it looks on the screen. Secondly, it gives me the security of knowing that they won't be able to do anything to it because they can't print it up. If they try to print up what I've shot, it will fall apart.

AC: On the other hand, that means that you have to be very exact in your exposure. Isn't that so?

WILLIS: Yes, I certainly have to be — but I'm very proud of the fact that I'm very meticulous in the way I expose film. That doesn't mean that I take hours. I'm actually very quick, but quite consistent in the way I expose material. I'm very sure of relativity. In other words, I know what something is going to look like a stop over the key or a stop and a half under the key. I never make general exposures. I always expose for something specific in the scene — always — and everything else in the scene relates to what I expose for. I know how the material is going to print, and it prints on one light throughout the movie. I tell the lab the pack to use and the light to use, and if they'll do it that same way from day to day they'll be pleasantly surprised. The relationship of underexposure to overexposure to normal exposure will all fall in properly. It's when they try to level everything off that they get into trouble. It won't work.

AC: I notice that you're using the new Mark VI Cinemobile on this picture, which is the first time it's been used by anyone. How is it working out?

WILLIS: I've never used a Cinemobile before on any movie. I wish I had. When I sat down and thought things out prior to starting this film, I realized that, of all the films I've worked on, if I didn't keep my end of this movie relatively tight and simple, it would look like the Normandy invasion. There would be trucks and bodies strewn all over the place. It's not that I'm using more equipment than I usually use. I'm using the same amount. It's just that there's a tendency for things to grow out to proportion on a "big" movie, or one that's had a lot of publicity. I wanted to keep my part simple.

AC: How did you happen to decide upon using the Cinemobile?

WILLIS: I went out to California to talk to Fouad Said because I thought he might have something to offer that would help me keep things fast and simple. After talking and thinking and working with him for a week I was very impressed and decided that what he had to offer was terrific. We've been using it for some time now and have found it to be excellent. The people he sends along with the truck are excellent, too.

AC: Do you find that you can carry everything you need for a big picture like this?

WILLIS: We've packed more firepower, so to speak, into that Mark VI than most people have got strewn over eight or ten trucks on the average movie. What I'm saying is, of course, based on my philosophy of making a movie. There are a lot of people in this business who still haven't given up using arcs. I gave them up long ago. So, even though the Cinemobile provides much room for arcs, if you choose to use them, I don't. I use that space for other types of lamps and things which I feel are of more value in shooting a picture. I've found the unit to be excellent. It's contemporary. It's well thought-out. It's a very meaningful piece of equipment for any cameraman, any producer. You can load and unload from both sides of the vehicle. The way it's designed, you can pull things off as you need them, without having to unload the whole truck to get at one thing.

AC: Is there anything it doesn't have that it should have?

WILLIS: Not really, even though there is one thing that we hadn't planned on. I happen to use hundreds of feet of Elemack dolly track, because I believe that if you're going to make dolly shots, you'd better be able to make them fast Anyway, we hadn't planned on taking along 200 feet of Elemack track. However, we've got it stacked on top of the van and it fits fine, because he provided for that with a railing area. I'm very delighted with the way Said has extended himself. He listens well and he'll incorporate your suggestions into his equipment. He'll keep making design changes, too, which I'm very happy about. I don't presume to speak for other people, but in my department I feel that he's made a major step forward in helping to modernize the business. He's made it easier and less costly for people to shoot, and that's very important. Movies cost enough money. There's no point in spending your entire day working as a parking lot attendant so that you can make a shot. I'm delighted with these trucks and I'll use them whenever I can — forever, if I can get hold of them. ▩

A Tradition of Innovation

by George Turner

Cinematographers have been making motion pictures for more than a century — not long when one considers the many centuries we've had painting, sculpture, architecture, music, drama and dance. From the beginning, the men behind the camera have had to call upon the skill and taste demanded by the most dynamic art form of our time: the movies.

Moving pictures on film came into being in several different countries almost simultaneously, and arguments still rage as to who invented them and where. In America, at least, they began at Thomas A. Edison's laboratories in Orange, New Jersey, in 1891. The camera, called the Kinetograph, utilized perforated 35mm flexible film which was intended for use in a peepshow device called the Kinetoscope. The electrically powered camera was invented by an Edison assistant, W. K. Laurie Dickson, utilizing ideas by Edison and the French inventor Etienne Jules Marey. George Eastman manufactured the film, which is even today the standard gauge for theatrical exhibition the world over.

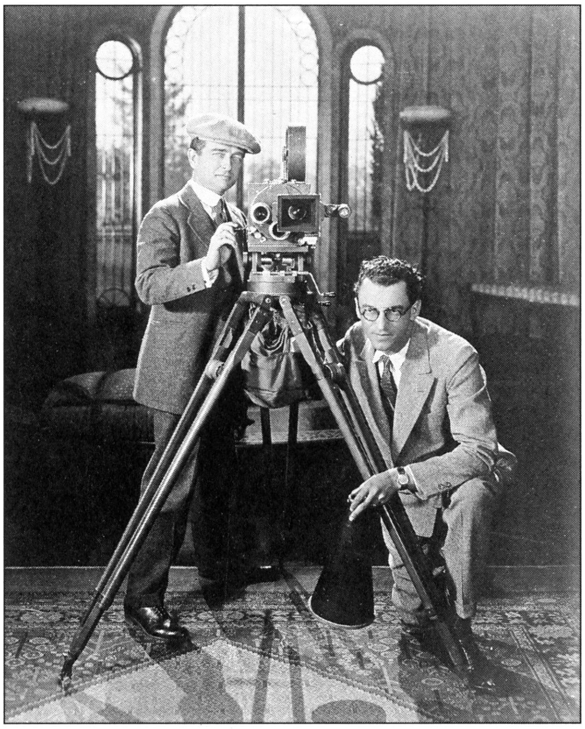
Dickson, the first American cinematographer, made his first movies in 1892. His 50-foot films were first shown to the public in 1894, by which time he had trained others to operate the crude, heavy camera. The cinematographer of that time was also producer, director, editor, still photographer, lab technician and grip. One such jack-of-all-trades was Alfred Clark, who in 1895 created another duty for cinematographers by introducing special photographic effects in *The Execution of Mary, Queen of Scots*. In one long take, spectators see the queen walk to the headsman's block and kneel, then watch as the executioner chops her head off. To accomplish this, Clark halted the camera after the queen knelt, the players "froze" until a dummy could be substituted, and photography was resumed to show the rest.

The film used by Edison was the only kind available in America for several years. The film perforations and intermittent camera movements necessary for projection were patented, and filmmakers unwilling to pay the use fees demanded by the owners soon began importing films and cameras from Germany, France and England and punching their own film perforations. Very strong light was necessary for adequate exposure, as all films were of very low sensitivity, approximating ASA 8. For several years, most staged films, even "interiors," were made outdoors or under a glass roof, because sunlight was the only practical light source for slow films and small apertures. The film was insensitive to yellows and reds, yet the results obtained with primitive cameras and films were often strikingly good.

Portable hand-cranked cine cameras soon broadened the cinematographer's horizons. Otto Brautigam, who started at Edison, said that in 1909 ". . . a cameraman's equipment consisted of a camera, one lens, and a plain tripod without 'pan' or 'tilt.' Focusing was done by putting one's head inside the camera with a magnifying glass held in the hand, [a method] with which we sometimes got absolute sharpness."

Artificial light was utilized for movies beginning in about 1900 at Edison's new rooftop studio in New York City — first to augment sunlight in the glass-roofed studios, and later to provide the principal light source for interior illumination. High-intensity arc floodlights, then commonly used in still-photo studios, were used overhead or on stands. Cooper-Hewitt mercury vapor lights, three-foot-long tube lights similar to the fluorescent lights of today, were set up in groups and used for softer lighting effects.

Probably the greatest early cinematographer was Edwin S. Porter, initially an Edison technician, whose work was enormously important to the development of motion picture style. His depth-staged photography in *The Great Train Robbery* of 1903 made most earlier movies seem outmoded. In about 12 action-packed minutes, he showed a train robbery and the tracking down and killing of the bandits by a posse. The prevailing style was to stage action horizontally, with the actors moving left or right, but Porter had his horsemen gallop from background to foreground, creating an illusion of depth. He used a close-up of the robber chief firing his gun into the camera and had the blast tinted red on the release prints — causing theater patrons to duck for cover. He used matte shots to show a train passing the window of a depot and real outdoors rushing past the open door of a baggage car. Porter also



In this 1919 photo Rudolph Berquist, ASC operates the camera and Phil Rosen, ASC kneels at right. Rosen was the first ASC president.

made "trick films" that equalled or surpassed those being made in France. He was one of the first to use artificial light creatively, such as lighting an entire room from a fireplace in which he had hidden an arc light in *The Seven Ages* (1905).

George Folsey, ASC, employed by Porter at Famous Players, recalled that in 1914, Porter was the first cinematographer to demand and get a full-time assistant cameraman. Within two years, many of his colleagues were getting assistants, and the art of cinematography took a great step forward. Assistants carried the camera and set it up, slated each scene, kept track of footage, loaded and unloaded the magazines, delivered exposed film to the lab, and sometimes took stills and did the lab work. They didn't just make life easier for the cinematographer, they enabled him to concentrate upon putting the best possible image on the screen.

George W. "Billy" Bitzer was among the earliest great cinematographers. He began his career with Dickson in 1896 and worked anonymously on hundreds of short films during the infancy of the movies, finally gaining fame and recognition for his work on multi-reel productions. By 1909, many moviegoers had commented that the American Biograph pictures were superior to most other product. All Biographs from mid-1908 to late 1913 — a total of some 450 productions — were directed or supervised by D. W. Griffith, and most were photographed by Bitzer. The innovations of this collaboration, including "Rembrandt lighting," vignetting, a meaningful employment of close-ups, and more rapid cutting, delighted some patrons and annoyed others.

The most famous Griffith-Bitzer picture, *The Birth of a Nation*, was made in Hollywood in 1914. In this and all his subsequent silent pictures, Bitzer used a lightweight Pathé camera, a vast improvement over the clumsy Biograph cameras. Introduced in about 1910, the Pathé cost only $300, and many cinematographers bought them. The body was made of wood covered with leather, and the crank was on the back rather than the side. Two turns per second yielded the 16 fps desirable for normal scenes; comedy and chases were usually undercranked to produce speedier action, but certain scenes were overcranked.

In 1908, Bell & Howell of Chicago introduced film perforating equipment which produced, for the first time, accurate, standardized sprocket holes (they are still standard for all 35mm cine film). Now perfect frame registration would have been possible, except that the available cameras allowed the film to weave or jitter. B & H, therefore, began making cameras. The expensive all-metal Model 2709 of 1912 had most of the features cinematographers wanted, especially a system of pilot pin film registration which eliminated the unsteadiness that had compromised in-camera effects. Because of its high cost, the camera was slow to catch on, but within a few years it became the most popular studio camera and remained so during the rest of the silent film era. Cinematographers took full advantage of its superiority to bring cinematography to a new plateau of artistry.

Of equal importance to cinematographers was the improvement of film stock, which was gradual before 1920 but then accelerated rapidly. A film backing was devised to control halation. Static generated by film moving through the camera, which plagued early cameramen, was brought under control. Light sensitivity was increased, although truly high-speed films were far in the future.

Panchromatic film, which was sensitive to all colors, was introduced by Eastman in 1913 for use in making separations for the Gaumont Chronochrome color process. Some cinematographers wanted to use it, but studios balked at the expense. Charles Rosher began using it for sequences in Mary Pickford productions in 1919, the year he co-founded the ASC. Ned Van Buren, ASC photographed the first all-panchromatic feature, *The Headless Horseman,* in 1922, and Robert Flaherty followed with his beautiful South Seas film, *Moana*, the following year. The latter dramatically illustrated the use of color filters in outdoor photography with pan film. In 1927, James Wong Howe, ASC bullied Paramount into letting him use pan film on *Underworld;* he got his wish, delivered a great job, and was fired.

A practical way of placing actors into unusual settings or dangerous situations without "ghosting" had eluded cinematographers for years. Joseph Walker, ASC invented a viable traveling matte composite system in about 1917. The system involved photographing actors in front of a screen and, on a contact printer, generating from the negative a silhouette (matte) element. These moving mattes were introduced into the background photography in a bipack camera or in a contact printer, providing a protected area into which the normally exposed original image of the actor could be doubled in the printer.

Cinematographer Frank Williams bought the process and in 1918 established a lab to provide these composites, known as "Williams Shots." The technique won praise for a harrowing sequence in *Beyond the Rocks* (1922), in which Rudolph Valentino rescued Gloria Swanson from a mountain crag. It was then showcased spectacularly in two 1925 epics: *The Lost World,* wherein a brontosaurus runs amok in London, and *Ben Hur.*

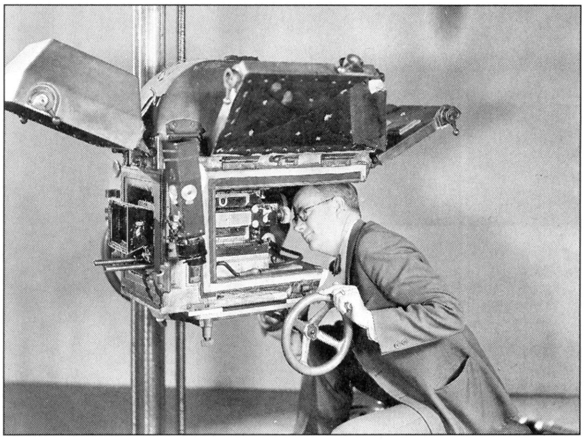
Color complementary traveling mattes (made possible by pan film) emerged in systems by Hans Goetz, Max Handsheigl, Friend Baker, ASC, Roy Pomeroy, ASC, Dr. L. M. Dieterich, and others. The most popular was the Dunning Process, invented in about 1925 by the youthful C. Dodge Dunning, ASC. It combined new photography on raw stock with contact printing of previously photographed footage *in* *the camera* in a single operation, utilizing the principle that an object of a certain color is invisible when viewed through a filter of the same color, but is seen distinctly when viewed through a filter of contrasting color.

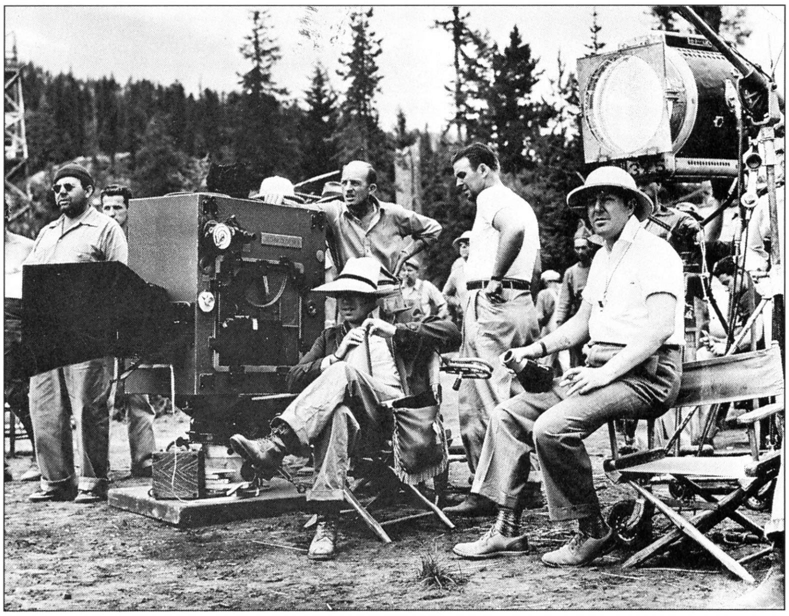
Ironically, the silent movie reached near-perfection and the brink of extinction simultaneously. Edison, from the beginning, attempted to make talking pictures; many others also tried, but failed to impress audiences. At last, in 1927, Warner Bros. made the part-talking/singing *The Jazz Singer*, and this time the public cheered. Many in the industry considered talking pictures a fad, a nightmare from which they would soon awaken, but audience demand for more "talkies" decreed the doom of the silent film.

For the cinematographer, this evolution was a giant step backward. Suddenly, the sound recordists were in charge, and actors had to huddle around hidden microphones. The clattering of the cameras could not be tolerated, so they were relegated to soundproof compartments the size of telephone booths. These were called "iceboxes," but what a misnomer! Cinematographers sweltered and gasped for air, and their creative instincts were stifled as well. Lighting had to be planned for multiple camera setups (no, this technique didn't originate with TV). Camera movement was stilled, while action and outdoor pictures were threatened with extinction.

The situation was intolerable. George Folsey had wheels put under his "icebox" so assistants could move it during scenes. This cumbersome method was soon displaced by a wide and weird variety of blimps and barneys in all the studios, all designed to snuff camera noise and allow the camera to move. Several people simultaneously found ways of moving the microphones around the set on fishing rods and other improvised ancestors of the mike boom. Increasingly efficient dollies and cranes made specifically for cinematography began to replace the makeshift perambulators of the past.

Optical effects, which had been part of the industry almost from the start but were limited by poor duping stock, blossomed in the sound era as film emulsions improved. Before World War II, "projection printing" was accomplished with home-made rigs made from cameras mounted in lathe beds. The Acme-Dunn Optical Printer, designed by Linwood Dunn, ASC and Cecil Love in 1943, made a factory-crafted printer available.





Above: At MGM in 1932 Oliver Marsh, ASC sets up a scene using a Mitchell which has been blimped for sound. ***Left:*** The huge Technicolor camera on location in Idaho in 1939 for *Northwest Passage.* Director King Vidor sits next to camera, Sidney Wagner, ASC leans on the blimp, Technicolor technician Paul Hill stands at right and assistant director Red Golden holds the megaphone.

By 1930, the novelty appeal of talking pictures had waned sufficiently to set the studios searching for other means of enticing audiences. Most of them launched wide-film productions on stocks ranging from 53mm to 70mm, but these failed because Depression-stricken exhibitors, already forced to acquire sound equipment, were unwilling or unable to install the necessities for wide-film presentation. Color photography, which had been attempted since the early days with only token success, was suddenly "in." Technicolor, Multicolor, Nature Color and other two-color processes enjoyed a boom that proved transitory because the added expense, unresolved technical problems and a lack of public acceptance made color an undesirable undertaking at that time.

Once the clumsy period was over, it became obvious that sound had brought many blessings.

Background projection — officially called "synchro-projection composite photography" — became feasible with the coming of the talkies. Earlier attempts at rear-screen projection by Norman Dawn, ASC at Universal, Paul Eagler, ASC at Inceville, and Karl Freund, ASC at UFA in Germany, among others, were thwarted by the low sensitivity of available film stocks, the limitations of available projection equipment, and the difficulties in trying to synchronize projectors with cameras. It suddenly became viable in 1930 because of the introduction of new film stocks with the astonishing speed rating of 50, synchronous motors necessary for interlocking sound with pictures, and sophisticated projection systems necessitated by a vogue for wide-film presentations. Small and dangerous ground-glass screens soon gave way to larger screens made of cellulose and other light materials, while double- and triple-head projectors increased screen illumination. Hans Koenekamp, ASC of Warner Bros., George Teague, ASC of Fox Film and Farciot Edouart, ASC of Paramount were among those whose experiments led to the success of background projection techniques that became one of the most widely used tools of the cinematographer.

Lighting equipment improved enormously, with incandescent light eventually replacing the smoky kliegs and sputtering arc lights. Now cinematographers could "paint with light" as never before.

The dream of making natural color films was realized. Three-strip Technicolor was ready in 1932, but it was expensive enough to put most producers off. Walt Disney's one-reel cartoon, *Flowers and Trees* (1932) was the first three-color Technicolor release. The first live-action release, and the first use of the three-strip camera, was the two-reeler *La Cucaracha*, followed by color sequences in several features. In 1935 came the first complete three-strip feature, *Becky Sharp*. Ray Rennahan, ASC, a veteran Technicolor specialist, photographed these and many more color classics to come. The picture that really won the public over to color films was the first all-location feature in full Technicolor, *Trail of the Lonesome Pine* (1936). *Gone With the Wind* (1939), photographed by Rennahan, Ernest Haller, ASC and Lee Garmes, ASC, was so popular that the future of Technicolor was secure.

Single-emulsion color systems by Eastman, Agfa and Fuji have long supplanted the cumbersome, expensive and "slow" three-strip process. Miraculously, new technologies have permitted the manufacture of fine-grain color films of fantastic sensitivity, permitting low-light-level photography under almost any conditions, something never before possible even in black & white. Today, black & white movies are a rarity.

Television came to the fore at last in the late 1940s. Its primitive days are long forgotten, thanks in part to the efforts of many fine cinematographers. High-definition TV is on the threshold.

Modern cameras, manufactured by Arriflex, Panavision, Aaton, Moviecam, Feathercam, Cinema Products and Photo-Sonics, are light and quiet. The lenses now available are magnificent. Electronic and digital technology now make it possible to put the impossible on the screen. Cinematographers are able to achieve standards never before possible. Wide film presentations are no longer a novelty, with 65mm (including the giant Imax and Omnimax 15-perf systems) and VistaVision formats experiencing a glorious renaissance. Improved anamorphic lenses yield high-quality widescreen pictures using 35mm film.

And yet, with all the marvelous technology at their command, it is the resourcefulness, ingenuity, imagination, daring and artistry of cinematographers that make great motion picture images. From thousands of examples, here are a few:

Resourcefulness? In 1907, Norman Dawn was alone in South America photographing native women bathing in a pool for a travelog. He made the scene through a patio window on which he had painted a hill with the ruins of a Mayan temple to replace the lifeless background of the actual scene.

Ingenuity? Eighteen years ago, Haskell Wexler, ASC conceived that seemingly impossible moment in *Bound For Glory* in which a camera on a high crane swung down to ground level and continued its move smoothly into areas no camera crane could possibly reach. The Steadicam, a then-new invention by Garrett Brown, had made it possible. It was Wexler's idea to have the Steadicam operator ride the crane, step off when it touched down, and walk through the rest.

Imagination? Panchromatic film made possible the scenes in *Ben Hur* (1925) wherein the lepers were healed, their ravaged faces changing slowly to normal. Cinematographer Karl Struss, ASC realized that via colored makeups and graduated color filters, he could photograph the miracle without dissolves or opticals. Six years later he elaborated upon the principle for Fredric March's baffling transformations in *Dr. Jekyll and Mr. Hyde.*

Daring? Ray June, ASC was perched on the side of a speeding locomotive while photographing stunt men on top of the engine. An oncoming express train made it necessary to switch onto a siding at high speed. A low semaphore crushed the camera and almost dragged June to his death, but he hung on and survived.

Artistry? Of all the media available for artistic expression, the purest is light, the paintbrush of the cinematographer. Of all the disciplines of art, the most vital is composition, the constant yet ever-changing language of cinematography. Of all the aims of art, the most difficult is communication, immutably demanded of every cinematographer. These, plus all the lesser elements of art, have been achieved again and again by cinematographers, whether hand-cranking primitive cameras or directing skilled crews operating the latest equipment.

The realization of concepts now being developed is certain in the near future and there will be breakthroughs that are now only dreams. The artists behind the cameras will embrace each new development with a flowering of ideas that will enrich the legacy to which they are the heirs.

FILMS SELECTED TO THE NATIONAL FILM REGISTRY, Library of Congress, 1989-1993

Congress' Film Preservation Act of 1988 established the National Film Registry List, for which 25 films are chosen each year (listed below along with their cinematographers) for preservation in the National Film Collection of the Library of Congress. The Registry, now numbering 125 films, was created in response to increasing concern about the protection and preservation of motion pictures. Approximately half of the movies made before 1950 have deteriorated beyond repair. The Library of Congress endeavors to obtain and maintain an archival quality original version of each of the films.

The choices have been made by Librarian of Congress Dr. James Billington, following consultation with the National Film Board, critics, historians, the public, the staff of the Library's Motion Picture, Broadcasting and Recorded Sound Division, and several industry organizations including the Screen Director's Guild and the ASC. The selection is not intended to be a list of "best" films, but rather are selected as being "culturally, historically, or aesthetically significant." A film is not eligible for consideration until at least ten years after its initial release.

Adam's Rib	1949	George Folsey, ASC
All About Eve	1950	Milton Krasner, ASC
All Quiet on the Western Front	1930	Arthur Edeson, ASC
An American in Paris	1951	John Alton, ASC (ballet sequence) and Alfred Gilks, ASC
Annie Hall	1977	Gordon Willis, ASC
Badlands	1973	Brian Probyn, Tak Fujimoto, ASC and Stevan Larner, ASC
The Bank Dick	1940	Milton Krasner, ASC
The Battle of San Pietro	1945	U.S. Army Pictorial Signal Corps.
The Best Years of Our Lives	1946	Gregg Toland, ASC
Big Business	1929	George Stevens, ASC
The Big Parade	1925	John Arnold, ASC
The Birth of a Nation	1915	G.W. "Billy" Bitzer, Karl Brown, ASC
The Black Pirate	1926	Henry Sharp, ASC
Blade Runner	1982	Jordan Cronenweth, ASC
The Blood of Jesus	1941	(documentary)
Bonnie and Clyde	1967	Burnett Guffey, ASC
Bringing Up Baby	1938	Russell Metty, ASC
Carmen Jones	1954	Sam Leavitt, ASC
Casablanca	1942	Arthur Edeson, ASC
Castro Street	1966	Bruce Baillie
Cat People	1942	Nicholas Musuraca, ASC
The Cheat	1915	Alvin Wyckoff, ASC
Chinatown	1974	John A. Alonzo, ASC
Chulas Fronteras	1976	Les Blank
Citizen Kane	1941	Gregg Toland, ASC
City Lights	1931	Rollie Totheroh, ASC
The Crowd	1928	Henry Sharp, ASC
David Holzman's Diary	1968	Michael Wadleigh, Paul Goldsmith, Paul Gluckman
Detour	1946	Benjamin Kline, ASC
Dodsworth	1936	Rudolf Mate, ASC
Dog Star Man	1964	Stan Brakhage
Double Indemnity	1944	John F. Seitz, ASC
Dr. Strangelove	1964	Gilbert Taylor, BSC
Duck Soup	1933	Harry Sharp, ASC
Eaux d'Artifice	1953	Kenneth Anger
Fantasia	1940	(animated)
Footlight Parade	1933	George Barnes, ASC
Frankenstein	1931	Arthur Edeson, ASC
The Freshman	1925	Walter Lundin, ASC, Henry Kohler
The General	1927	J. Devereaux Jennings, ASC, Bert Haines
Gertie the Dinosaur	1914	(animated)
Gigi	1958	Joseph Ruttenberg, ASC
The Godfather	1972	Gordon Willis, ASC
The Godfather, Part II	1974	Gordon Willis, ASC
The Gold Rush	1925	Rollie Totheroh, ASC
Gone With the Wind	1939	Ernest Haller, ASC, Lee Garmes, ASC, Joseph Ruttenberg, ASC, Ray Rennahan, ASC, Wilfred Cline, ASC
The Grapes of Wrath	1940	Gregg Toland, ASC
The Great Train Robbery	1903	Edwin S. Porter
Greed	1924	William Daniels, ASC, Ben Reynolds, Ernest Schoedsack
Harlan County, USA	1976	Hart Perry
High Noon	1952	Floyd Crosby, ASC
High School	1968	Richard Leiterman
His Girl Friday	1940	Joseph Walker, ASC
How Green Was My Valley	1941	Arthur Miller, ASC
I Am a Fugitive from a Chain Gang	1932	Sol Polito, ASC
Intolerance	1916	G. W. "Billy" Bitzer, Karl Brown, ASC
The Italian	1915	(unknown)
It Happened One Night	1934	Joseph Walker, ASC
It's A Wonderful Life	1946	Joseph Biroc, ASC, Victor Milner, ASC, Joseph Walker, ASC
Killer of Sheep	1977	Charles Burnett
King Kong	1933	Eddie Linden, J.O. Taylor, ASC, Vernon Walker
Lassie Come Home	1943	Leonard Smith, ASC
Lawrence of Arabia	1962	Frederick A. Young, BSC, ASC
The Learning Tree	1969	Burnett Guffey, ASC
Letter from an Unknown Woman	1948	Franz Planer, ASC
Love Me Tonight	1932	Victor Milner, ASC
Magical Maestro	1952	(animated)
The Magnificent Ambersons	1942	Stanley Cortez, ASC
The Maltese Falcon	1941	Arthur Edeson, ASC
March of Time: Inside Nazi Germany	1938	(newsreel documentary)
Meshes of the Afternoon	1943	Alexander Hamid
Modern Times	1936	Rollie Totheroh, ASC, Ira Morgan, ASC
Morocco	1930	Lee Garmes, ASC
Mr. Smith Goes to Washington	1939	Joseph Walker, ASC
My Darling Clementine	1946	Joseph MacDonald, ASC
Nanook of the North	1922	Robert Flaherty
Nashville	1975	Paul Lohmann
A Night at the Opera	1935	Merritt B. Gerstad, ASC
The Night of the Hunter	1955	Stanley Cortez, ASC
Ninotchka	1939	William Daniels, ASC
Nothing But a Man	1964	Robert Young
On the Waterfront	1954	Boris Kaufman, ASC
One Flew Over the Cuckoo's Nest	1975	Haskell Wexler, ASC, Bill Butler, ASC, William Fraker, ASC
Out of the Past	1947	Nicholas Musuraca, ASC
Paths of Glory	1957	Georg Kraus
A Place in the Sun	1951	William Mellor, ASC
Point of Order	1964	(documentary)
The Poor Little Rich Girl	1917	Lucien Andriot, ASC
Primary	1960	Richard Leacock, D.A. Pennebaker, Terrence McArtney-Filgate, Albert Maysles
The Prisoner of Zenda	1937	James Wong Howe, ASC
Psycho	1960	John L. Russell, ASC
Raging Bull	1980	Michael Chapman
Rebel Without a Cause	1955	Ernest Haller, ASC
Red River	1948	Russell Harlan, ASC
Ride the High Country	1962	Lucien Ballard, ASC
The River	1937	Stacy Woodard, Floyd Crosby, ASC, Willard Van Dyke
Salesman	1969	Albert Maysles
Salt of the Earth	1954	Leonard Stark, Stanley Meredith
The Searchers	1956	Winton Hoch, ASC
Shadow of a Doubt	1943	Joseph Valentine, ASC
Shadows	1953	Erich Kollmar
Shane	*1953*	Loyal Griggs, ASC
Sherlock, Jr.	1924	Elgin Lessley
Singin' In the Rain	1952	Harold Rosson, ASC
Snow White and the Seven Dwarfs	1937	Ray Rennahan, ASC, Technicolor consultant
Some Like It Hot	1959	Charles Lang, Jr., ASC
Star Wars	1977	Gilbert Taylor, BSC
Sullivan's Travels	1941	John Seitz, ASC
Sunrise	1927	Charles Rosher, ASC, Struss, ASC
Sunset Boulevard	1950	John Seitz, ASC
Sweet Smell of Success	1957	James Wong Howe, ASC
Tevye	1939	Lawrence Williams
Top Hat	1935	David Abel, ASC
Touch of Evil	1958	Russell Metty, ASC
The Treasure of the Sierra Madre	1948	Ted McCord
Trouble in Paradise	1932	Victor Milner, ASC
2001: A Space Odyssey	1968	John Alcott, BSC
Vertigo	1958	Robert Burks, ASC
What's Opera, Doc	1957	(animated)
Where Are My Children?	1916	Al Siegler, ASC, Stephen S. Norton, ASC
The Wind	1928	John Arnold, ASC
Within Our Gates	1920	Oscar Micheaux
The Wizard of Oz	1939	Harold Rosson, ASC, Allen Davey, ASC
A Woman Under the Influence	1974	Caleb Deschanel, ASC
Yankee Doodle Dandy	1942	James Wong Howe, ASC

Looking Forward to the Future of Film

by Bob Fisher

> *"Never have I found the limits of photographic potential. Every horizon upon being reached reveals another beckoning in the distance. I am always on the threshold."*

On the occasion of the 75th anniversary of the American Society of Cinematographers, we find ourselves pondering those unlimited horizons of W. Eugene Smith, a photojournalist whose career began in the 1930s and who produced remarkable images of war over a span of five decades. Such milestones are a time for contemplation about the experiences of the past and dreams of the future. In *AC*'s survey of current leaders in the field of moving image capture, we discovered that there is no shortage of opinions about the future of filmmaking.

> . . . the 100-year history of the film industry has taught us that no technology is assured of inevitable success, and that all are only a means to an end.

At the recent Association of Independent Commercial Producers Conference in New York City, John Galt, director of Creative Services for Sony's Los Angeles-based High Definition TV Center, presented an impressive display of image light amplifier electronic projection technology by the Hughes-JVC Technology (HJT) Corp. During the presentation, which included scenes culled from the HDTV camerawork by John Alonzo, ASC, on the TV mini-series *World War II*, Galt predicted that economic forces will inevitably lead to electronic distribution of theatrical features. Some powerful studio executives and technology gurus embrace this electronic cinema scenario, the underlying premise being that it will ultimately be cheaper to distribute electronic images and sound via satellite, fiber optics lines or another carrier than it is to mass produce film prints and physically deliver them to cinemas.

Presuming that a massive transition to electronic cinema will occur, Galt also speculated that there won't be sufficient economic incentive for film manufacturers to compete. At that point, he suggested, that there will be a shift to electronic image capture.

But don't sell your film camera yet: the 100-year history of the film industry has taught us that no technology is assured of inevitable success, and that all are only a means to an end. 3-D was innovative technology, but it flopped at the box office. Those magnificent CinemaScope movies revitalized the industry, and then gave ground to multiplexes. Like them or not, the multiplexes were in the right place at the right time, and they provided more diverse choices in film titles for a public with multi-faceted interests and tastes.

With such a malleable medium, open to infinite interpretations, cinematographers have never had more creative freedom in terms of their ability to capture color images on film. Kodak alone makes seven different types of color negative, ranging from a 50-speed daylight balanced film to a choice of 500-speed emulsions with noticeably different image capture characteristics, in terms of contrast and color saturation. And yet Janusz Kaminski earned the 1993 Oscar for cinematography for *Schindler's List* using black & white film stocks invented some 50 years ago; while filming the movie he had to resort to such primitive 1950s tactics as spraying mist in the air to neutralize static electricity caused by the heavy silver content of the films.

Moral: the future of film is in the hands of the filmmakers, rather than the toolmakers. And it is a concern for their work that has led many in the television and film industries to propose a standard of television that will keep filmmakers' images as close to the original version as possible when broadcast on television.

Sometime during the next year, the Grand Alliance of finalists in the competition for establishing an HDTV transmission standard for the United States will present its recommendations to the FCC. These recommendations will almost certainly call for 1050 lines of vertical resolution. The latter is a key to the FCC's plan to simulcast programming in NTSC and high-definition formats during a 15-year break-in period. That is both a political and economic necessity, and ensures that people who own NTSC TV sets will receive the same program content as those who invest in new HDTV receivers.

The new television system will also have a wide-screen aspect ratio. The early favorite is 16:9, based on the original proposal by NHK more than a decade ago. Consumer electronics manufacturers are already gearing up to produce 16:9 HDTV sets. However, during the past several months, an ASC ad hoc committee studying this issue has come to a different conclusion, and are recommending a 2:1 aspect ratio as part of the HDTV transmission standard.

Steve Poster, ASC, chair of the committee, recently presented this proposal at the International Artists Rights Symposium, sponsored by the Artists Rights Foundation, in Los Angeles. Poster pointed out that the technology and manufacturing communities conceived and sanctioned the proposal for a 16:9 aspect ratio without bringing the artistic community into the dialogue.

The original NHK proposal called for a film-like, wide-screen aspect ratio, and 16:9 is a near-perfect match for the 1.85:1 Academy standard aspect ratio used for the production of feature films with spherical lenses. The problem is that this premise ignores a substantial legacy of 65mm wide-screen and anamorphic films made in a 2.4:1 aspect ratio during the past 40 years.

"A large percentage of the existing library of feature films would have to be letterboxed for HDTV display in 16:9 format," Poster says. "This decision will affect the visual aesthetic of all new production, as well as irrevocably alter how all motion picture work from the past will be seen by future audiences."

Poster notes that it isn't a decision which should be made lightly. A decision by the FCC for a 16:9 aspect ratio assumes that theatrical films destined for eventual home video or commercial TV will either be produced in spherical 1.85:1 format or will be letterboxed for HDTV display.

Earlier this year, the Technology Council of the Motion Picture-Television Industry conducted an extraordinary film format seminar at the Academy of Motion Picture Arts and Sciences. Interior and exterior scenes were produced in six different film formats, ranging from Super 16 to 65mm, and including Super 35, 1.85:1, Super 1.85 and anamorphic (2.4:1). All but the Super 16 footage was projected in both 70mm and 35mm print formats. The audience, who were not told what formats they were looking at, selected the images they liked best in terms of image quality and emotional impact.

Tech Council executive vice president Rob Hummel, who conducted the seminar, says it was no contest. "The 70mm prints

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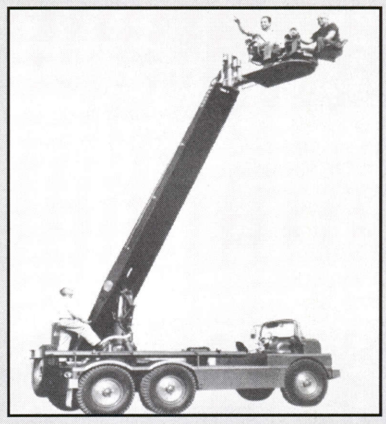

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made from 65mm negative scored absolutely the highest. Next came 70mm prints made from the 35mm anamorphic negative. That was a big surprise. I always thought you degraded the quality of the image when you made a 70mm blowup from a 35mm negative. Probably a key factor is magnification. The 35mm image projected on the big screen at the Academy theater was magnified 1,400 times. The 70mm frame was magnified 600 times."

The third choice was 35mm prints made from the anamorphic original. Next came Super 35, which the audience preferred to 35mm prints made from 1.85:1 negative. The bottom line, according to Hummel: The larger the image area, and the wider the aspect ratio, the more engaging the film is, at least in terms of image quality.

"That's another reason why we shouldn't settle for a 16:9 aspect ratio for HDTV," says Poster. "In order to be compatible with a 16:9 HDTV frame, you would have to shoot features in the 1.85 aspect ratio. That doesn't make sense, because as television becomes a more sophisticated form of entertainment, we have to find ways to enhance the moviegoing experience, and that calls for wide-screen images with stereo digital sound."

" . . . as television becomes a more sophisticated form of entertainment, we have to find ways to enhance the moviegoing experience, and that calls for wide-screen images with stereo digital sound."

Poster says that the ad hoc committee prefers a 2.4:1 aspect ratio for HDTV, but recognizes that practical engineering and manufacturing requirements have to be considered. The ASC proposal calls for a 2:1 aspect ratio for both HDTV and theatrical feature production. "Existing films would be digitally mastered and distributed in their native aspect ratio," he says. This idea presents an interesting paradox for the FCC, which is likely to face pressures from television set manufacturers to stick with the original proposal for a 16:9 aspect ratio. However, Poster contends that this wouldn't be in the interests of either the artistic community or the public.

Poster concludes: "Helping filmmakers get their vision to the audience should be the goal. That's what draws audiences. . . and contributes to our mutual success. Cinematographers, as visual storytellers, play a crucial role in creating the emotions that help tell stories through images. What could be more important to these painters with light than the shape of their canvas? The best way for the audience to feel those emotions and understand the stories is by viewing them in a form as close to the original intent of the artist as possible."

That chapter about the future of television is still unwritten; however, you can probably safely make some other assumptions about HDTV. There will be six tracks of stereo digital sound; it will be digital-based; it will ultimately be interactive; and it will enable viewers to call up programming on demand. All programming will be converted to digital format, with the digital data stored in databases or file servers. Individuals will be able to use "personal navigators" to select programming. AT&T and other content and "pipeline" (the people who provide the means for delivering programming) providers have done some limited testing of interactive TV, and early adapters participating in these tests show a preference for movies on demand. They also use their interactive TVs to play video games, pay bills, and for shopping. But don't confuse the latter with today's shopping channel; think of it as visiting the mall without leaving home. Remember, the computer at the other end of the interaction will recall who you are, what you bought before and what your tastes are.

Equally impressive are the changes foreseen by filmmakers, developers and technicians, beginning with film stocks. "We are calculating the theoretical possibilities for improving today's silver halide films," says Dr. Howell A. Hammond, associate director of the Imaging Research and Advanced Development Laboratories at Eastman Kodak Company, "and we believe they can be improved by a factor of around 10. That doesn't mean that we will make films with the grain structure of today's 100-speed film 10 times faster. But it does mean that it is theoretically possible."

With the rapid evolution of computer modeling, it now takes months to design a film which previously would have taken years, and that makes film manufacturers potentially more responsive to the specialized needs of filmmakers. "We can design films which have very specific characteristics in terms of contrast or response to colors, in addition to making films that are faster or finer-grained," says Hammond.

Lens manufacturers are also looking forward to contributing to improved filmmaking technology. "The gap between spherical and anamorphic lenses has narrowed considerably," says Panavision chief lens designer Ian Neil. "For practical purposes, maybe there is a one-stop difference in terms of speed, and with today's faster films that is no longer a handicap. With very few exceptions, there isn't much that you can do in spherical format today that you can't also do with anamorphic lenses. We are working on things like veiling glare and eliminating or at least reducing ghosting."

And, of course, digital cinematography, a catch-all term for digital image manipulation by cinematographers working at computer workstations, will continue to advance into more and more of the filmmaking processes. Initially, digital postproduction was seen as a visual effects tool, for wire and other object removal, and for digital compositing. With the evolution of sophisticated software, cinematographers now have almost total freedom in camera movement while shooting blue or green screen elements for composite shots. They can eliminate scratches and remove objects which don't belong in period films. In one recent Western, bloodstains were removed from a character's shirt to make it acceptable for use in a trailer. In another PG-rated film, a brief bathing suit bottom was extended to cover some of an actress' exposed body parts with the aid of "electronic paint." In *Wrestling Ernest Hemingway*, an actor was clearly breathing after he was supposed to be dead. The image was fixed by scanning the film into digital format, literally erasing parts of frames where the actor's shirt was moving or breathing, and replacing it with cloned images from frames where the shirt was still.

In *Radioland Murders*, many of the backgrounds and exterior scenes were "digital backlots": either computer-generated images or miniatures scanned into digital format for compositing. Another picture currently in development will make considerable use of footage from Buster Keaton films ranging all the way back to 1916. In tests conducted by Kodak's Cinesite digital film center, the 70- to 75-year-old footage was scanned into digital format for restoration, and the digital pictures converted to contemporary frame size and output onto an intermediate film, which intercut seamlessly with live-action footage.

Another term to get used to is "character replacement." In *In the Line of Fire*, B-roll footage of President George Bush and First Lady Barbara Bush deplaning from Air Force One was scanned into digital format. The heads of the actors playing the First Couple were composited into the image. In another film currently in production, several well-known per-

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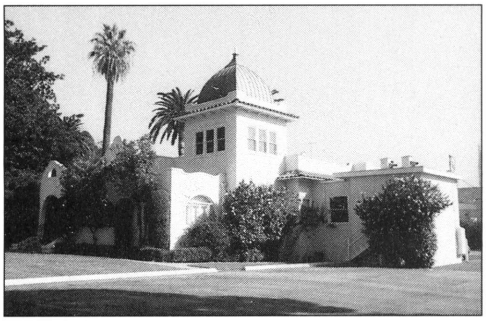

1919 — The American Society of Cinematographers is founded on January 8th. First club meetings are held in Hollywood's Markham Building.

1920 — On November 1st, the first issue of *American Cinematographer* magazine appears.

1924 — The ASC purchases four offices on the top floor of the new Guaranty Building on the corner of Hollywood Blvd. and Ivar.

1927 — On May 4th the articles of incorporation for the Academy of Motion Picture Arts and Sciences are filed with the California Secretary of State.

1929 — The first Academy Awards ceremony is held on May 16th in the Blossom Room at the Hollywood Roosevelt Hotel on Hollywood Blvd. The first Oscars for Best Cinematography go to Charles Rosher, ASC and Karl Struss, ASC for *Sunrise.*

1933-1935 — On July 25, 1933 an unauthorized strike of all cameramen (first, second, assistant cameramen and still photographers) is called by the International Association of Theatrical and Stage Employees (IATSE).

The strike fails, but it causes the ASC to protect its members in the classifications of first and second cameramen and still photographers. At a special meeting of the ASC, held on September 5, 1933, a representative of the Association of Motion Picture Producers proposes a long-term contract with the ASC for all first cameramen, with provisions for salaries and working conditions to be agreed upon.

In an effort to hold together the entire cinematographic craft, the ASC amends its by-laws to accept second and assistant cameramen as members in a junior division of the ASC. An agreement is signed on January 3, 1934 between the Society and the AMPP covering the working conditions and scale of wages for first cameramen, second cameramen, still cameramen and assistant cameramen, to continue in force for a five-year period.

However, through a secret agreement with the producers and IATSE at a meeting held in New York on December 8, 1935, the second cameramen, assistant cameramen and still photographers are taken over from the ASC to become members of IATSE.

1936 — The ASC sells its quarters in the Guaranty building for $20,000 and seeks out a new site.

1937 — The ASC makes a down payment on the former residence of film star Conrad Tearle at 1782 North Orange Drive in Hollywood. First meeting held in new clubhouse on February 28th.

1947 — The National Academy of Television Arts and Sciences is incorporated in the state of California.

1949 — A projection booth is added to the clubhouse, equipped with the most modern 35mm and 16mm machines. In December, the mortgage is paid. A "burning of the mortgage event" is held; the special guest of the evening is comedian Red Skelton, who wryly observes: "You should have burned the building and saved the papers!"

1950 — A Student Film Award program is started; its aim is to encourage young filmmakers in the perfection and recognition of their work. The first winner is Conrad Hall of the University of Southern California.

1955 — On March 7th, the Television Academy gives out its first award for Best Direction of Photography for 1954. The winner is Lester Shorr, ASC, for the series *Medic.*

1960 — The first edition of the *American Cinematographer Manual* (the cameraman's bible) is printed. The editors were Joseph V. Mascelli, ASC, Arthur Miller, ASC and Walter Strenge, ASC.

1969 — The ASC Board of Governors elect to honorary membership the Apollo 11 astronauts Neil A. Armstrong, Edwin E. Aldrin, Jr. and Michael Collins.

1973/74 — The lot adjoining the Clubhouse property is purchased in 1973. A separate building is erected to provide headquarters for the library and magazine publishing offices.

1984 — Astronauts Dr. Ronald McNair and Bruce McCandless of the Challenger mission 41-B are inducted as honorary members. This mission was the first time standard Hollywood motion picture cameras were carried into space. Two films were made on this mission. The first for Cinema-360, Inc., *The Space Shuttle: An American Adventure* in the Cinema-360 format which uses 35mm Eastman color film, shot with Arriflex 35-3 cameras fitted with Nikkor 8mm f2.8 fisheye lenses for ultra wide-angle field of view. The second film for the Smithsonian, *The Dream is Alive,* was shot in Imax/Omnimax 15-perf 70mm format.

1987 — The First Annual ASC Awards for Outstanding Achievement in Cinematography are held at the clubhouse on February 28th. The first ASC Award goes to Jordan Cronenweth for *Peggy Sue Got Married.*

formers playing cameo roles were replaced with doubles during live-action photography. The star performers were brought in for a day or two, and were filmed against blue or green screen background. In postproduction, their faces will be superimposed on the doubles' bodies.

Kodak recently unveiled an early version of its digital cinematography software, which allows camerapersons to selectively manage grain. They can de-grain and re-grain images transferred to digital format, boost particular highlights, alter colors, change the overall tonal scale, and color-balance and "sweeten" the image in a variety of other ways. Theo Van De Sande, ASC, who participated in a recent workshop, envisioned the possibility of adding a cloud to the sky in a live-action scene filmed on a sunny day. "You could get the cloud from another film, composite it into the sky, blocking the sun, and alter the image to reflect the shaded areas created by the cloud," he says. "It is possible to create a custom look for a film at a digital workstation," he says, "although I don't know how practical it will be in the near future."

Planning their own revolution are the makers of movie theaters. Douglas Trumbull, recently named vice-chairman of IMAX Corporation, was the keynote speaker at ShowBiz Expo in Los Angeles, where he focused on the evolution of the art form. Trumbull's vision of the future includes the development of urban entertainment centers, also called location-based entertainment. The latter includes ride-films and other "immersive entertainment" — to use Trumbull's words. It includes theaters featuring Imax, Showscan and Iwerks film formats. Most of these formats feature the use of 65mm film, projected at accelerated rates, i.e., 60 frames a second in the case of Showscan, 30 fps for Iwerks, etc. Trumbull has also experimented with the VistaVision large-frame format, exposed and projected at 48 frames a second.

However, he envisions

bringing fiction films to Imax theaters. They will be shorter and more intensive than traditional film formats. Trumbull believes that there is an inverse relationship between the immersive quality of the images and sound and the length of the film: the more engaging the film, he feels, the shorter it should be.

As for the aforementioned electronic cinema, some powerful potential players have a considerable vested interest in it. At the NAB conference, in Las Vegas, Pacific Bell announced plans to conduct an experiment involving the distribution of feature films in digital format to as many as 10 theaters in the Los Angeles area over high-speed phone lines. They spoke about potential savings in the neighborhood of hundreds of millions of dollars annually, assuming a total conversion from film to video projectors at some 25,000 screens in the U.S. The savings would mainly come from eliminating costs for manufacturing film prints.

> "Helping filmmakers get their vision to the audience should be the goal. That's what draws audiences. . . and contributes to our mutual success."

An added incentive, cited by PacBell, is the ability to provide exhibitors with different versions of the same film, i.e., G, PG and R. That's an idea that would take some getting used to in the creative community, and it leaves unanswered a question about who would make the various cuts.

PacBell said it will cost $100,000 for a single screen to gear up for high-quality electronic projection. The consensus is that the best system currently available for this purpose is the Series 300 Image Light Amplifier projector marketed by HJT. It features the use of liquid crystal light valve

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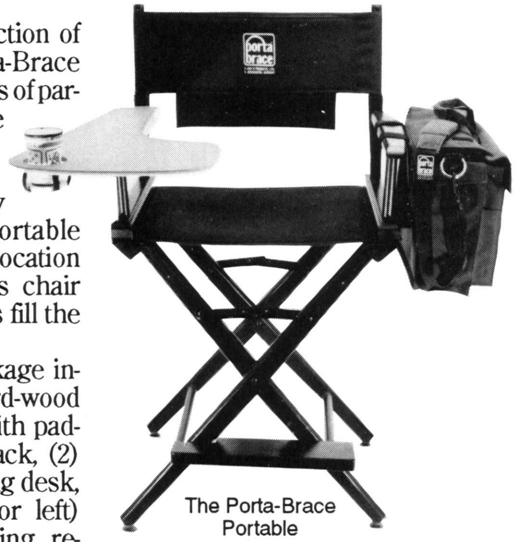

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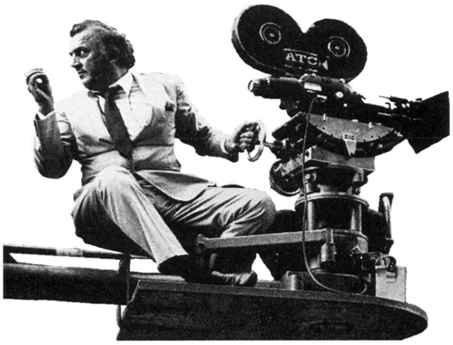
LCLV technology was developed to satisfy a need for high-resolution command and control screens in U.S. military war room environments. A joint venture between Hughes and JVC was formed to commercialize the technology for industrial, home video and theatrical display. The Series 300 Image Light Amplifier Projector (currently priced at $70,000) is targeted for corporate boardrooms and similar business applications.

A theatrical version of this projector will require accessories, including a high-density hard disk for replaying the film. The exhibitor would probably also need a new projection screen. Movies would be stored in digital file servers by PacBell. When the movie is requested, it would be sent in compressed format in real time to the theater through digital switchers. At the receiving end, the image would be decompressed and restored to reflect the quality of the original images.

There are a lot of "ifs" in this scenario, its success depending on whether the compression algorithms (program) can replicate the quality of the original image after it is decoded; whether the projected electronic image can fill a 48- or 60-foot wide screen with sufficient image resolution and brightness; whether it is possible to prevent would-be pirates from making unauthorized connections to the digital projector; and whether costs for equipment acquisition, maintenance, operation and tariffs for transmission provide sufficient margin to amortize the investment required. However, the biggest "if" of all is whether the moviegoing public will perceive a sufficient difference in the enhanced home video and electronic cinema experiences to bring them to the theater.



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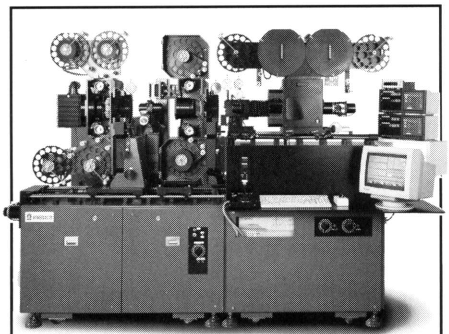

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New Products

compiled by Marji Rhea

Anamorphic System

Fullscope, a new anamorphic system designed by a retired Egyptian major general, is now available for demonstration in London. A 35mm prototype of the new system has been made which puts a 180-degree image onto a cylindrical screen; a 360-degree system is currently under development, as are 70mm versions of both systems.

The system's camera lens has a BNCR mount and will fit onto most standard cameras, is small enough to be handheld, and takes in an angle of 180 degrees and puts a fan-shaped anamorphic image onto the film. Both camera and projector lens are f/2 and in focus from nine inches to infinity. The camera can be run at any frame rate depending on the capabilities of the camera and the projector. The projector lens is small and will fit onto most projectors with little modification. The projector must be placed, like the camera, in the center of the 180-degree arc of the screen and aligned either with the top or bottom of the screen.

The cylindrical screen covers a 180-degree arc horizontally but is upright vertically. Because the image is projected from the center of the arc, there are no cross reflections and there is no need for Cinerama type strips or the 8% reflectivity gray screen of Imax. The 180-degree image is free of distortion and the definition and screen brightness are as good in the extreme corners of the screen as in the center.

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Spacecam and MSM Design have designed a 65-15 format camera package on the Series II Spacecam system. The MSM 65-15 camera includes a high-resolution video viewfinder, camera speeds of 1 to 60 fps and a complete lens set. Installation involves a vertically mounted 1000-foot magazine which enables the system to be packaged within the existing 36-inch diameter sphere. An optional setup permits removal of the enclosure, facilitating use of the ultra-wide lens. Flight speeds with the dome installed can be in excess of 150 m.p.h. and speeds of up to 70 m.p.h. may be reached with the enclosure removed.

For information: Spacecam Systems, 7022 Valjean Ave., Van Nuys, CA 91406-3914, (818) 988-2472, FAX (818) 988-2474.

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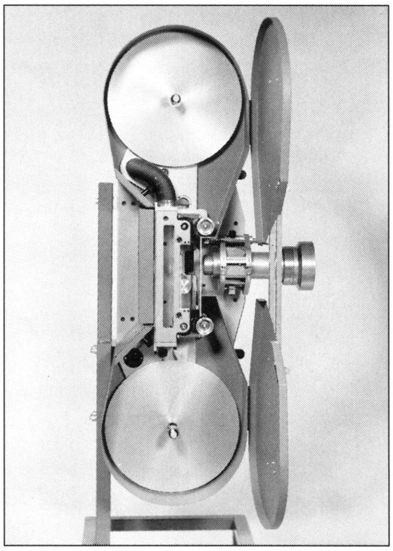
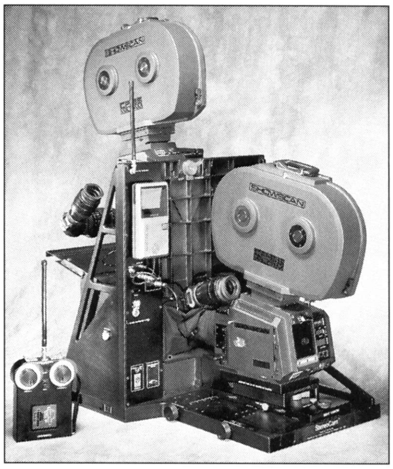
Pioneer's Linear-Loop Projector, designed for specialty venues and motion simulators, transports film by a constant air flow directed perpendicular to the film web. A linear sprocket positions and registers the film image as the film loop is transported through the projection chamber, and a film sprocket transports the film into the linear sprocket chamber. A loop is formed by an intermittent mechanism that holds approximately one frame of film; when the film fills the loop former, a rotating cam jogs the loop former, expunging the film loop, which now rolls along the linear sprocket by the constant flow of air. The film is transported out of the linear sprocket chamber by the take-up sprocket.

The unit weighs 25 pounds, is 13 inches high, 16 inches deep, and 15 inches wide, and runs on 120 VAC, 50/60Hz, single phase.

For information: Pioneer Technology Corporation, 1021 N. Lake St., Burbank, CA 91502, (818) 842-7165, FAX (818) 842-0921.

Below: *Pioneer's Linear-Loop Projector.* Right: Hines Lab's *Stereocam.*





Remote-Control 3-D Filming System

Hines Lab is offering wireless remote control as part of StereoCam, the company's three-dimensional filming system. The handheld remote control allows independent adjustment of the interaxial spacing and changes in convergence distance of the dual camera rig during filming. StereoCam consists of a rigid, lightweight dual camera mount that can accommodate both film and video cameras, with an RS-232 output provision for matching 3-D animation to live action. The complete package includes the remote control, an illustrated

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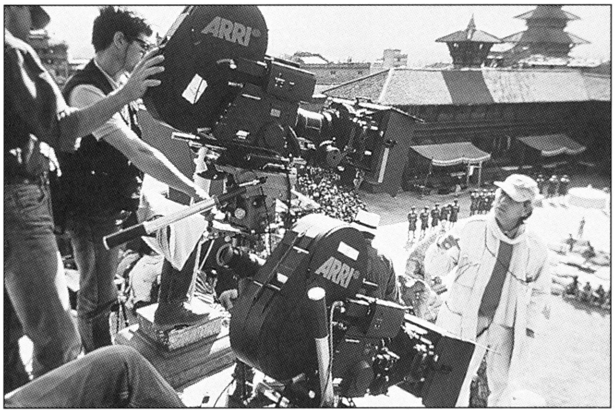

LITTLE BUDDHA

"I woke up every day thinking I would take another step toward the meaning of life, and that was a wonderful experience. It's a journey you never complete.

Vittorio Storaro, ASC, AIC

It is one thing to do research and find a better way to record an image; that is something you do consciously. It is an entirely different experience when you discover something new at the moment of photography.

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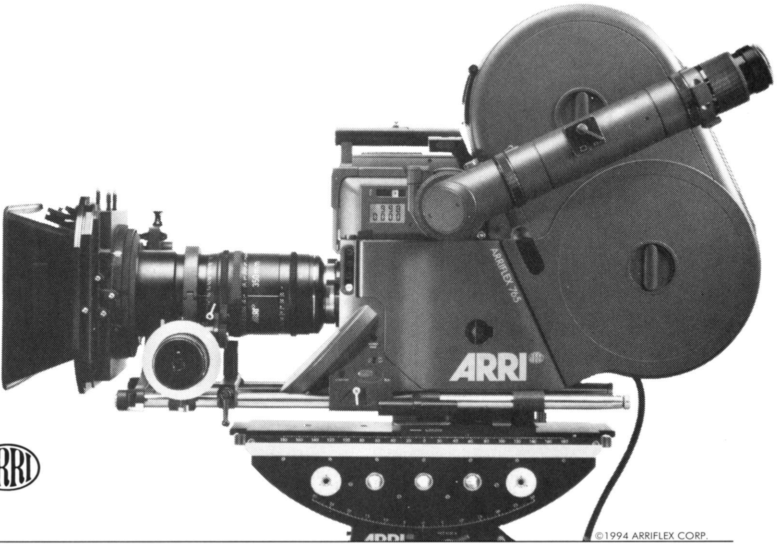

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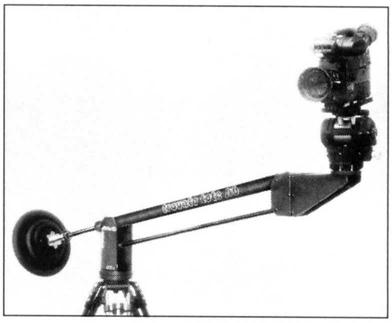
manual, a 3-D pocket computer for calculating minimum convergence settings, and a 3-D video assist with built-in 8mm VCR.

The system has been used on such films as *Journey Into Nature* for Landmark Entertainment Group, *Concerto for the Earth* for Showscan, and *Haunts of the Olde Country* for Iwerks.

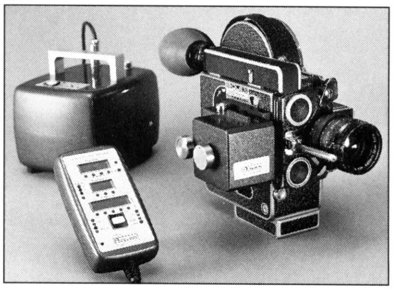
For information: Hines Lab, 4525-B San Fernando Rd., Glendale, CA 91204, (818) 507-5812, FAX (818) 507-8537.



Jib

The Trovato Tote Jib is designed to handle 16mm and video packages weighing up to 75 pounds, has a reach of 46 inches, a vertical travel of four feet, and a head that inverts for underslung operation. It weighs 30 pounds, is available with all standard mounts, and features easily adjustable pan and tilt bearings.

For information: Trovato Mfg., Inc., (716) 244-3310.



Special Effects Camera

The Rotavision Bolex Special Effects Motor, by the makers of the Mitchell Super Motor, is a compact animation, live-action and remote control system for Bolex cameras that features multiple exposures per frame, burst function, and a wide range of animation exposure times. Its special effects drive unit is both a crystal-locked synchronous live-action motor and an intervalometer-controlled single frame and time-lapse

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For information: Rotavision Camera Systems, Inc., 2313 West Olive Ave., Burbank, CA 91508, (818) 567-1399, FAX (818) 567-1320.

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For information: Tom O'Connor, Desktop Video Systems, 14121 West

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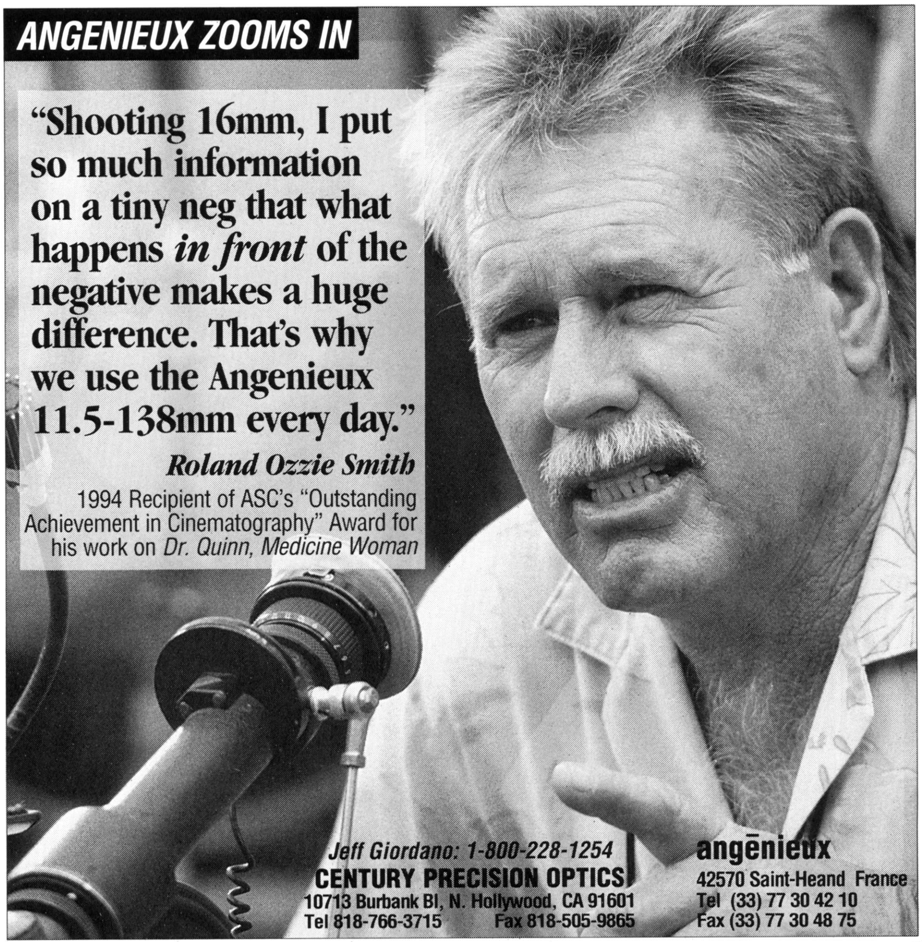

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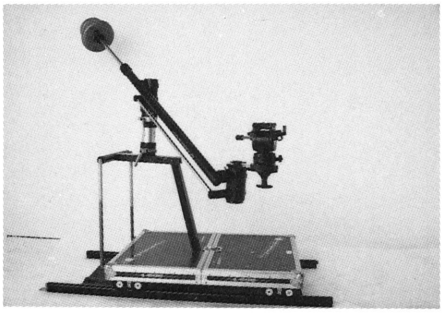

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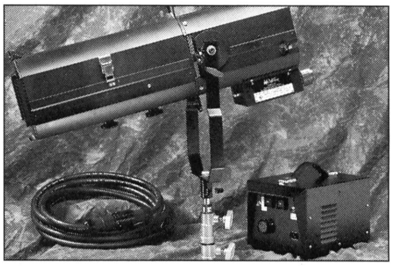

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For information: Wildfire, Inc., 11250 Playa Court, Culver City, CA 90230-6150, (310) 398-3831, (310) 398-1871.

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For information: Light Wave Systems, 7760 Burnet Ave., Van Nuys, CA 91405, (818) 780-3002, FAX (818) 780-3992.

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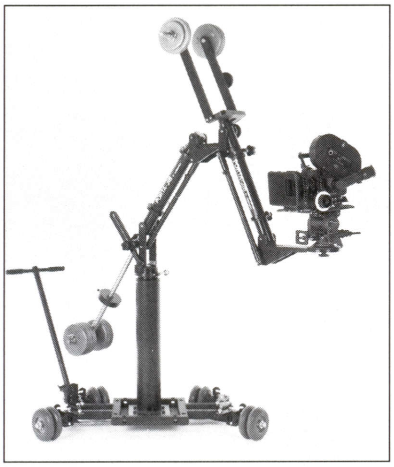

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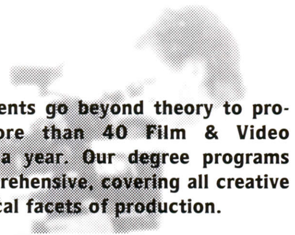

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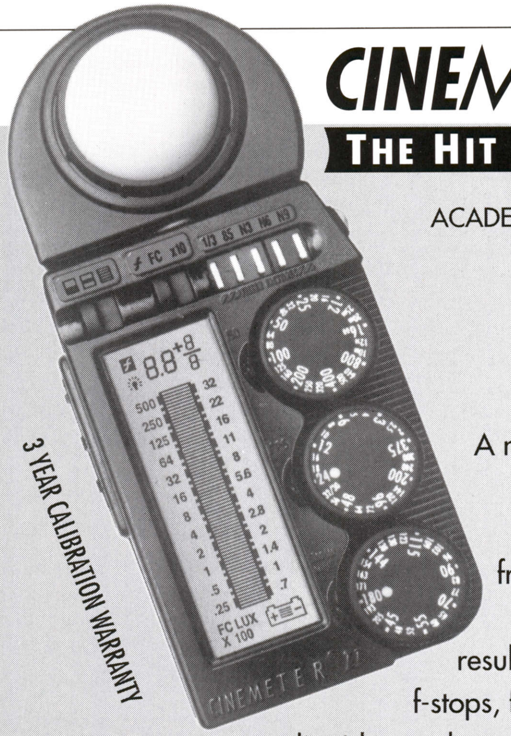

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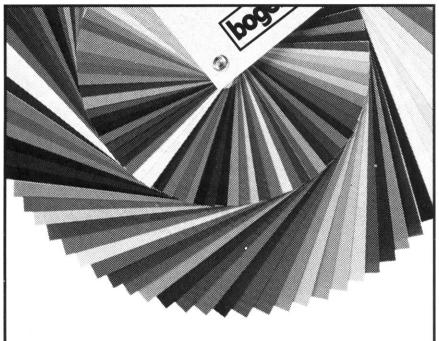

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Guide to Filming in U.K.

The second edition of the British Film Commission's Check Book guide to filming in the U.K. provides updates on law and finance and on working with the constituencies of the U.K. production sectors. Further aspects of the industry have also been covered, notably music, international partnerships and technological developments. Divided into eleven sections, the guide covers filming on location, the production industry infrastructure, law, finance, insurance, travel and freight, communications, location and filming guidelines, labor agreements and working practices, new technological developments and music recording.

Check Book 2 complements another BFC initiative, FIND, the Film International Database, and is free of charge.

For information: BFC, 071.224.5000, FAX 071.224.1013.

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The unit accepts up to three lampheads and all standard Broncolor accessories. It is compatible with the Pulso and Opus systems.

For information: Sinar Bron, 17 Progress St., Edison, NJ 08820, (908) 754-5800, FAX (908) 754-5807.

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Kino on Video's "The Movies Begin" is a five-volume collection of more than 120 films made between 1894 and 1914. The series was two years in the making and was jointly produced by film scholar David Shepard of Film Preservation Associates and Heather Stewart of the British Film Institute. The films are mastered from archival material, contain new musical scores, and feature early works of cinema's pioneers, including Thomas Edison, Louis Lumière, George Méliès, Edwin S. Porter, Eadweard Muybridge, Max Linder, Pathé Frères, D.W. Griffith, and Mack Sennett, as well as lesser known filmmakers.

Volume I features cinema's earliest landmarks and rarities, including the 1877 motion studies of Muybridge, early productions of Thomas Edison's Black Maria, and Porter's hand-tinted 1903 *The Great Train Robbery*. Volume II features European works taken from the BFI archives. Volume III covers experimental works such as Pathé Frères' 1901 *Peeping Tom* and Cecil Hepworth's 1900 *How It Feels to Be Run Over*. Volume IV features the special effects wizardry of Méliès and includes his early short films and a documentary about his work. Volume V explores the definition of cinematic genres at the turn of the century.

For information: Kino On Video, 333 W. 39th, New York, NY 10018, (800) 562-3330.

Video on Video

Communication Bridges' *Digital Video-Video* demonstrates and explains the latest Macintosh digital video technologies. Sponsored by Avid, Adobe Premiere, CoSA, Data Translation, Micropolis, Specular International, VideoFusion, and Videography magazine, the video was written, produced, directed and hosted by Jon Lelan. In it he interviews ILM's Bruce Walter and showcases samples of professional work produced on Mac systems from other artists.

For information: (800) 685-3636.

PC Video Editing System

Miro Computer Products' miroVideo DC1 tv digital video capture and playback card for IBM PC and compatible computers offers on-board motion JPEG compression and full-screen, full-motion video capability. The system includes Adobe Premiere for Windows, VideoStudio digital video and still image editing and effects software, Microsoft Video for Windows capture driver and miroVideo-XL real-time compression driver. Users can capture NTSC, PAL, or SECAM video from any source via the board's RCA or S-video input connectors. The real-time hardware motion JPEG compression engine allows the capture and playback of professional-quality, full-motion (30-frame) video at full-screen resolutions. Once the video has been captured and edited, the results can be recorded back to standard videotape via the board's output connectors. Users simply plug the board into a standard ISA slot and install the accompanying software. The system is compatible with any third-party graphics card.

For information: Miro Computer Products, 955 Commercial St., Palo Alto, CA 94303, (415) 855-0940, FAX (415) 855-9004.

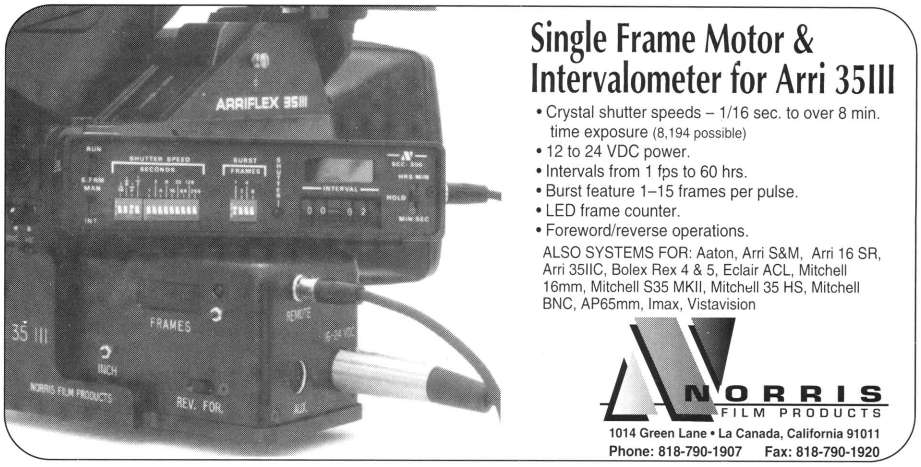
Real-Time Disk Array

Ciprico's 6800 Real-Time RAID (redundant array of independent disks) Disk Array, for medical imaging, video-on-demand, satellite imaging, and film/video production applications, provides sustained transfer rates of over 19 MB per second and features Data-on-Demand capabilities to eliminate interruptions attributable to disk drive delays such as thermal calibrations, retries, media reassignments, and command processing errors. For applications requiring multiple simultaneous streams of real-time data, the 6800 also offers "seekless" disk operations, which masks disk drive seeks, resulting in random read performance that is as fast as single-stream, sequential-access perfomance.

The 6800 is compatible with Ciprico's 6700/10 series of RAID disk arrays. It is offered in 4, 8, 16, and 40 GB configurations. All arrays are available in either Spectra (for SGI platforms) or Rimfire (for OEM and other platform) packages.

The company's Spectra 6000 RAID disk array will be integrated into Parallax software's Advance editing, compositing and effects software package for both SGI Onyx and Indigo platforms, providing extremely fast access time to film or video frames and the ability to achieve 30 fps of video in real time on the Onyx.

For information: Ciprico, Inc., 2800 Campus Drive, Plymouth, MN 55441, (612) 551-4000, FAX (612) 551-4002.



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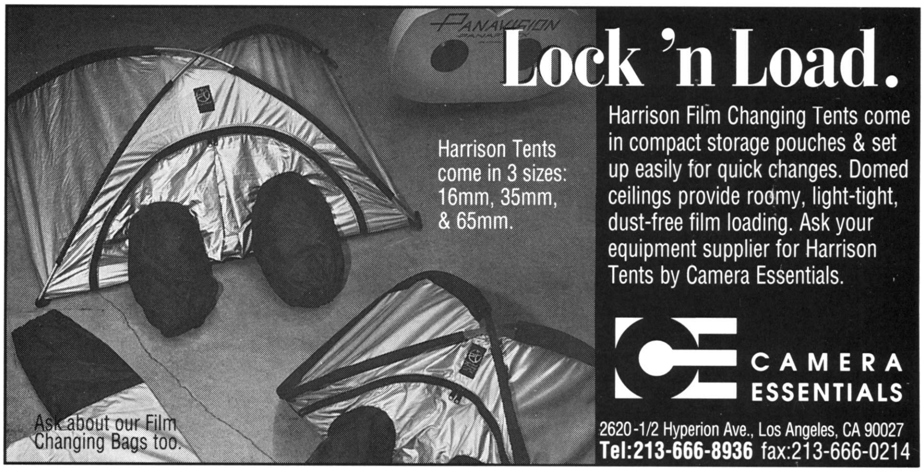

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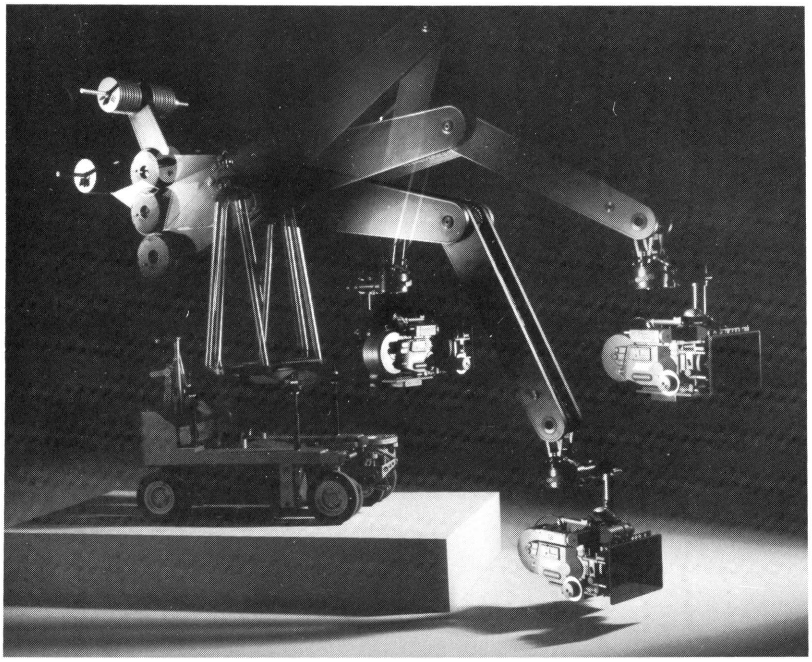

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Upcoming Events

August 5-7, 1994: Florida Premier, The Florida Motion Picture and Television Convention and Trade Show, including an exhibitor trade show and the Crystal Reel Awards, Orlando. For information: (904) 222-6000, FAX (904) 681-2890.

August 12-14: Cahiers du Cinema Selects Recent French Films, program of new French films, American Cinematheque at the Directors Guild Theater, Hollywood. For information: (213) 466-FILM.

August 12-14: Writers Connection Presents Selling to Hollywood Conference, Glendale, California. For information: (408) 445-3600, FAX (408) 445-3609.

August 15: Deadline for entries: New York Exposition of Short Film and Video, New York City. For information: (212) 505-7742.

August 22-September 2, 1994: The Real Film Producing Workshop, Amsterdam Summer University, Amsterdam. For information: P.O. Box 53066, NL-1007 RB Amsterdam, 3120.620.0225, FAX 3120.624.9368.

September 9, Deadline for entries: 19th Annual Banff Festival of Mountain Films, Banff, Alberta, Canada. For information: (403) 762-6125, FAX (403) 762-6277

September 9-11, September 30-October 2, and December 9-11: Robert Bordiga's Nuts & Bolts Production Seminar, in Los Angeles, New York, and Orlando, Florida, respectively. For information: (800) 755-PROD.

September 9-11: Monty Python: Lust for Glory! Celebrating 25 years of Monty Python, American Cinematheque at the Directors Guild Theater, Hollywood. For information: (213) 466-FILM.

September 22-27, 1994: Photokina Professional Media, with ICIA Pavilion, Infocomm Video Projection Shoot-out and Infocomm War of the Walls, Cologne, Germany. For information: Kirsten Young, Infocomm, (703) 273-7200, FAX (703) 278-8082.

September 24-26: ShowBiz Expo Europe, Munich, Germany. For information: (714) 513-8400, FAX (714) 513-8481.

Points East

NY's New Film Commissioner Returns to Her Old Post

by Brooke Comer

Pat Scott knows her way around the production community. New York's new film commissioner, chosen by Major Giuliani to replace Richard Brick, brings insight from her old job — film commissioner under former Mayor Ed Koch — and from her career as an actress and singer. She won an Emmy for the PBS show *Getting On* before moving into city government and public relations in the early 1970s.

"There was a great need then, as there is now, for the city film office to have enough information and services to supply the volume of film business New York is capable of servicing," says Scott, who received the Governor's Award for the Expansion of Television in 1989, as well as the National Film Board of Review's award for Outstanding Service to Motion Pictures.

Scott remembers when former New York Mayor John Lindsey founded the film office 28 years ago. "It was small, but it's become an ancillary, and it has a great many changes on its plate. No other film office has unilateral permitting ability over such a wide area."

How will the city office face some of the problems that have plagued New York production? "For one thing," says Scott, "Mayor Giuliani has shown the film industry significant support through his film financing initiative. Basically, he's using the city's ability to go to the credit market and get a better interest rate, closer to the commercial rate versus the prime rate." For a production to qualify, the project must have a completion bond guarantee and distribution deal and shoot 70% of its shooting days in New York. If those conditions are met, the financing incentive can serve as a "friend at the bank," says Scott. "We can save smaller productions debt service costs, which vary according to rates. Since we borrow far below the prime rate, that's a big help. The money saved can be put on the screen."

Meanwhile, the city has a healthy influx of productions in town. *The Cosby Mystery Series* was picked up for 22 episodes, and will join *Law And Order*, which also shoots at the Chelsea Piers. Fox Cable's FX Cable, which features live programming out of New York, will reach 18 million subscribers over the new cable system. With any luck, Dick Wolf's new Universal TV series *Uptown Under Cover* will be as successful as the producer's previous venture, *Law and Order*. If it is, it will also occupy space on the ample Chelsea Pier stages. "Don't forget the talk shows and soaps," says Scott. She counts five full-hour soap operas in production 52 weeks of the year.

Scott is enthusiastic about a $22 million film that "looks like it's coming to town," as well as the projects slated for summer and fall of '94. She lists *Basketball Diaries* from Island Pictures, starring rapper Marky Mark; Barbet Schroeder's 20th Century Fox film *Kiss of Death;* Gomez' *Jersey Drive*; Caravan Productions' *Jerky Boys* for Disney; as well as *Batman III*, *Die Hard III*, *Hackers* from MGM/UA, and Jon Peters' *Money Train* and Paul Mazursky's *Faithful* from Tribeca.

"People remember the positive things about a city," Scott points out. Producers will remember the better pricing on hotels when New York State takes off its 5% hotel tax and the city of New York takes off an additional 1%, bringing the tax down to 15%, which is the norm in other big cities like San Francisco and Chicago. Further, Mayor Giuliani chose to remove the 4% sales tax on "everything that is manufactured with tools and is a consumable, like lumber for sets."

Scott is also excited that New York has a shot at taking the lead in the field of multimedia arts. "We need to find out exactly what the new technology

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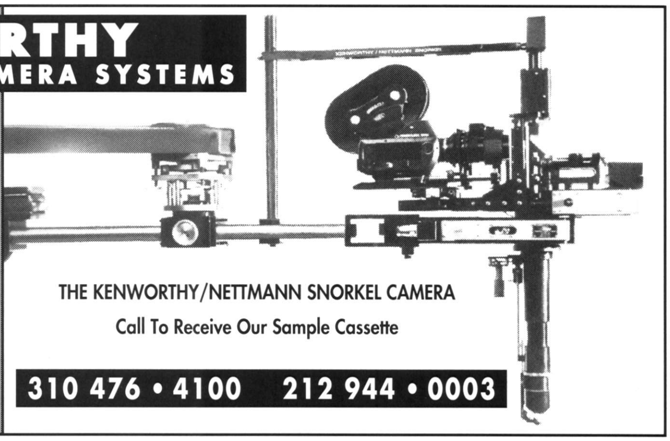

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is bringing forth in order to find out how New York can put itself in a position to capture the market," says Scott.

One of Scott's most vital sources, Bob Greenberg of R/Greenberg Associates East, is a leading force in the burgeoning new media. Greenberg hired Stanley Winsten as President/CEO of R/GA Interactive, a testimony to his company's commitment to the interactive multimedia arts. "Bob Greenberg is someone whose advice we will continue to seek out," says Scott. She calls Greenberg "a creative visionary whose extraordinary company is in a position to capture this new market. We'll be listening closely to Bob, to find out what the city government can bring to the table and to make sure New York has the competitive edge."

At a recent trade meeting, Greenberg said that "at R/GA Interactive, we are working on games for all hardware and software platforms, interactive advertising for the full service networks, and interface designs for the new online services." He notes that last year, retail sales of the video game marketplace reached $8 billion, nearly $1 billion more than total box-office receipts for feature films released during the same period. "We hope to eventually branch into CD-ROMs that are designed for educational purposes."

Tribal Media epitomizes the kind of project Greenberg describes. Tribal is a joint venture of Philips Media and R/GA Digital Studios, an interactive entertainment company that will develop and distribute interactive software. Greenberg cautions that the word "interactive" is becoming "as overused as the term 'information superhighway.'" He adds that the term interactive can be applied to many other forms of comunication, such as magazines and books. "For us, 'interactive' in today's market means the ability to combine video, text, audio and graphics to allow the user control over the elements or the final product through the integration of the different parts."

New York, an amalgam of diverse people, services and ideas, is the perfect launching ground for the kind of new media capital Greenberg and commissioner Scott envision.

Books in Review

by George Turner

Talking Pictures With the People Who Made Them

by Sylvia Shorris
and Marion Abbott Bundy
The New Press, cloth,
372 pps., $25

If you resent having had the "auteur" theory forcibly shoved down your esophagus for years, you should take heart in the increasing number of books that reflect an awareness that directors and actors aren't alone in the filmmaking process. One reassuring example is *Talking Pictures,* for which the authors interviewed 38 industry stalwarts who worked in the "Golden Age" of the studio system.

In a foreword, Robert Altman says that "For me, making films has always been about collaboration and surprise. The opinion of a grip, the eye of the editor, the experiment of the cameraman, and all the spontaneous things that happen within the filmmaking family add to the final artistic whole." These good words, from a director who worked his way up through the ranks of "below the line" people, echo throughout the book.

The ASC is well represented in excellent interviews with Al Keller (listed, for some reason, as "first assistant camera operator"), George Folsey and Lin Dunn. Others mention cinematographers, but some of the names lose something in the translation from tape to type (Phil Krasna for Milt Krasner, Byrock for Biroc, Buning for Broening).

All of the subjects are veteran filmmakers with nary a recent film school grad in the bunch. Several have passed away since the interviews were begun about eight years ago, giving their words a special poignance. The talk is not at all technical, but interesting information about how things were done at the studios often comes to the surface. The inequities of the system are spotlighted here and there with some bitterness (as when scenarist John Bright refers to Darryl Zanuck as "a tin-pot Mussolini" and to Alfred Green as "a literal-minded hack"), but most recollections are expressed with nostalgia, both fervent and begrudging.

Attack of the Monster Movie Makers

by Tom Weaver
McFarland, cloth,
396 pps., $35

Here's another interview collection that is good reading. It is the third book of this kind by the prolific Weaver. All interviews are slanted (as the title hints) toward genre films; the venerable writer Charles Bennett, for example, wrote many screenplays, including several of Alfred Hitchcock's best, but the emphasis here is on his several science-fiction and fantasy scripts. This limitation considered, the interviews are well done and often revealing.

A few highlights: the vivacious Lupita Tovar about making Spanish-language versions at Universal; Vincent Price recalling a long, fun-filled and sometimes brilliant career; Jacques Marquette, ASC, telling how he became a producer-director-writer-cinematographer of low-budget chillers; Susan Hart's recollection of almost being struck by a gaffer who fell from the rafters to his death; Cameron Mitchell saying of "gore pictures" that "I make 'em but I don't have to see 'em."

Several subjects are salty talkers who pull no punches. Charles Bennett calls Harry Cohn ". . . the most revolting character in the world, with a foul tongue all the time," and Irwin Allen ". . . a dreadful man, with the most swollen head. . ." Rose Hobart comments that Carl Laemmle Jr. "didn't know his ass from a shotgun" and calls Otto Preminger "an absolute bastard because he had no sense of humor about anything." And then there's William Phipps, who calls Victor Jory "a pompous ass" and Susan Douglas "one of the biggest pain-in-the-asses I ever worked with," and says of Arch Oboler, "I don't think he was a ge-

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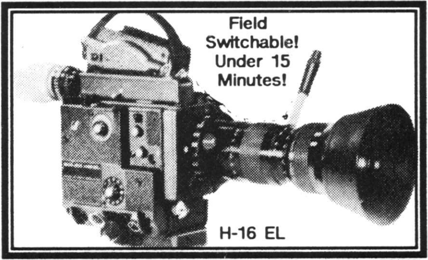

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nius at all, not by any stretch of the imagination."

Television Production
by Ronald Whittaker
Mayfield, cloth,
579 pps., $52.95

Before addressing the technical details of his subject matter, the author of *Television Production* tells of a broadcast pro who opened his address to a graduating TV class by saying, "First, I'd like to congratulate all of you on four successful years in college. But, I regret to inform you that everything you have learned is now out of date." The things that date so rapidly, he hastens to add, are mainly those involving technology; the principles relating to taste and skill change but little. This hefty textbook, filled to the brim with words and pictures, is a fine source of practical information about all phases of TV production.

Whittaker deals in a practical manner with the principles of composition, lighting, editing, set design and construction, lenses, cameras, color technique, sound, video effects, single and multi-camera techniques, on-camera concerns, and more.

The book goes into important detail in each instance. Under "Lighting," for example, Whittaker reviews light coherence involving hard and soft light, color temperature, color continuity, light intensities, light meters, controlling intensity, incandescents, HMIs, problem lights (such as fluorescents), mixed light sources, lighting instruments (including fresnels, scoops, broads and ellipsoidal spots), key light, fill light, backlight, background light, lighting ratios, intensities of backlight and background lighting. Also covered in depth are the lighting grid, lighting multiple subjects, high key, low key, single camera, multi-camera, following source, light control equipment, creating a lighting plot, location lighting, camera lights, existing light in ENG work, placement problems, power problems, and the art of lighting. Following all this is a modest admission that no attempt has been made to cover complex lighting needs.

The glossary (with some 1,500 entries) adds to the worth of a valuable book.

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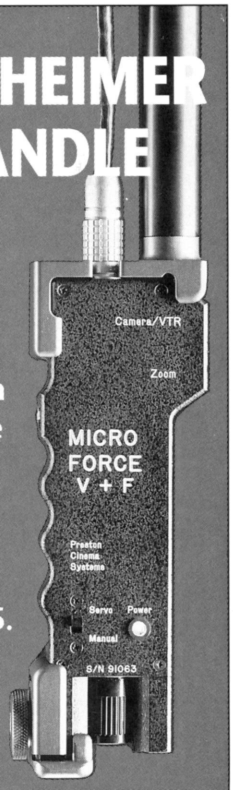

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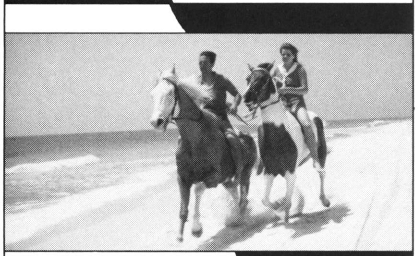

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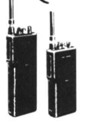

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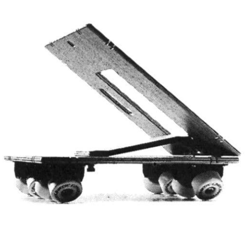

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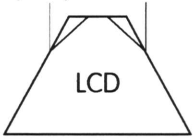

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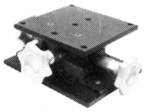

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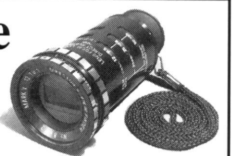

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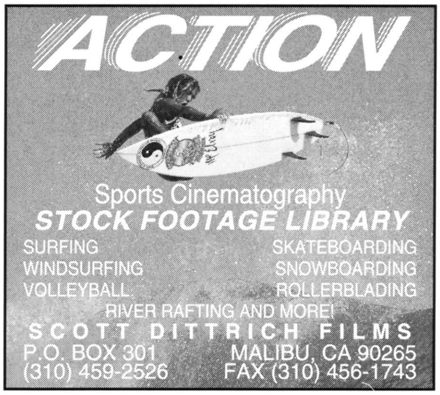
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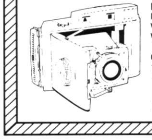
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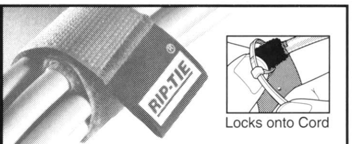

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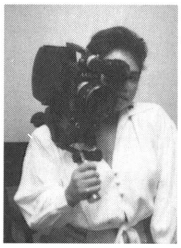
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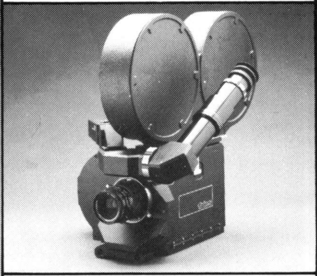
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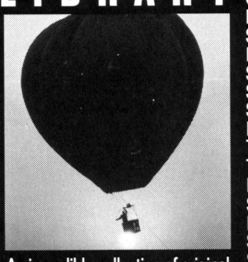
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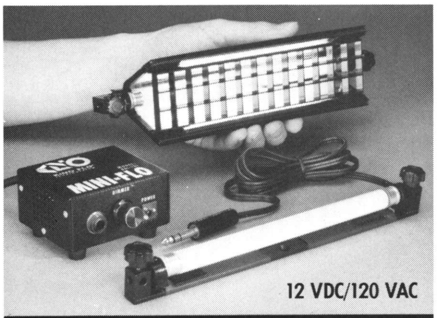

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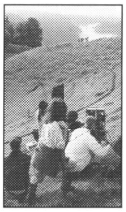

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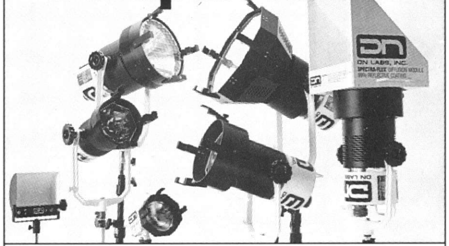

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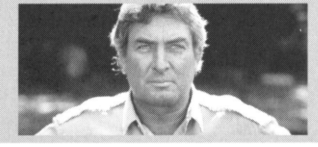

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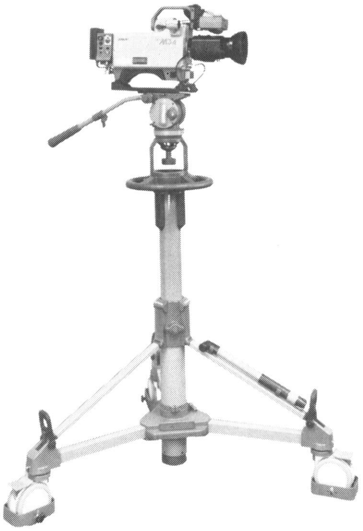

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In Memoriam

Jack Richards, ASC, who photographed many of the motion picture and television projects that were filmed in and around his home town of Chicago, died of cancer on May 20, 1994. He was 77. Richards was a former president of Camera Local 666, and a member for 38 years. He became an active member of the ASC in 1977.

Richards was born in Chicago on August 6, 1916. A Navy veteran, he served as chief gunner's mate during some of the fiercest fighting of World War II. Upon returning to Chicago, he began his movie career as a studio manager for Coronet Films. In 1963, he became a director of photography of the TV series *Wild Kingdom.* The program won Emmy Awards during each of the five years he was there. He was also a cameraman at Cape Canaveral during the early years of the space program. Eventually, Richards became well known as a second-unit director of photography on Hollywood-based productions that were filmed partly in Chicago and the Midwestern and Southern states. He also did main-unit work on theatrical, television and documentary productions. Among the directors he worked with were Steven Spielberg, Robert Altman, John Milius, Herbert Ross, Norman Lear, Elliot Silverstein, John Llewellyn Moxey, Don Taylor and Jerry Paris.

His credits as director of photography include *A Guy Could Get Killed Out There, The Beast Within, On the Right Track, Monkey Hustle, Viva Max!, Open Admissions, Night of Courage, Vital Signs, When Dreams Came True, First Steps, Through Naked Eyes, Listen to Your Heart, American Dream, Towing, Weed, Ride In a Pink Car, Scream Bloody Murder, Finney, Willi and Scratch, Lucky Martin* and *Chicago Story.* His second-unit, additional cinematography and stunt cinematography credits include *Buffalo Bill and the Indians, Dillinger, T. R. Baskin, Cold Turkey, Adventures in Babysitting, A Wedding, Ice Castles, Damien — Omen II, The Bingo Long Travelling All-Stars and Motor Kings, Sugarland Express, The Silver Streak, Nashville, Deliverance, Sounder, Sugar Hill, Winning, The Longest Yard, White Lightning, The Rievers, Lady Ice, The Great Waldo Pepper, The Night Stalker, Mary White, The Gathering* and others. In some instances he also worked as a first-unit operator for visiting cinematographers.

Richards' documentary work included two Emmy Award winners, *Three From Illinois* for NBC and *Lengthening Shadow* for CBS, as well as two Oscar nominees for Best Short Documentary, *A President's Country* and *A Gateway To the West.* Some of his many commercials were for Yardley, The Yellow Pages, United Air Lines, Buick ('79, '80 and '81), McDonald's, Hallmark, and Continental Bank.

Steve Poster, ASC, a fellow Chicagoan, had this to say about Richards: "I met Jack when I first got into the business in 1969. He was always the kindest and most helpful of cinematographers, and was very concerned with young cinmatographers' careers. Jack always appeared much younger because of his enthusiasm for his profession. His wife, Sioux Richards, and I were friends from the time she entered the business as a script supervisor. When they got married, they became a loving and helpful couple, and were always good to their friends. I'll miss Jack and his excitement about the film business."

Richards is survived by his wife, Sioux Richards, a script supervisor; his daughter, Colee Fischer; and two grandchildren. A memorial service was held in Chicago.

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From the Clubhouse

The ASC has two new associate members in its ranks, Andy Romanoff of Louma L.A. and Henri D. Petit of Eastman Kodak Company. Romanoff, president of Louma L.A., was once head of film at Chicago PBS affiliate WTTW, and has since worked for thirty years in documentary, commercial and feature production. He brought the Academy Award-winning Louma crane to the U.S., and supervised the use of the cranes on such pictures as *1941, Best Little Whorehouse in Texas,* and *Wolfen.* He designed and successfully marketed one of the first commercially available time code systems intended for multi-camera filming, and supervised its operation on such films as the Talking Heads' *Stop Making Sense* and Sting's *Bring on the Night.* He is also the designer of Concertcom, a system for multi-camera filming of concerts and events.

Between 1982 and 1987 he worked for Panavision, Inc., where as senior director of corporate communications he was responsible for all Panavision press, advertising and trade shows.

He has written on film and video technology for publications in the U.S. and England, and has been the subject of numerous articles and interviews in such publications as *AC, Millimeter, On Location* and *Film & Video.*

Since 1987 he has been a principal at First Light Video Publishing, where he helped to conceive and direct many of the company's productions, including *Shaping Your Sound with Multitrack Recording.*

He has also worked on *The Entity, Something Wicked This Way Comes, Hoffa, The War of the Roses, Big Trouble in Little China, Rocky V, Life Stinks, War Games, Cat People,* and *Blade Runner.*

Henri D. Petit, vice president and general manager of motion picture and television imaging at Eastman Kodak Company, began his Kodak career in 1975 as assistant to the manager of the purchasing division at Kodak Pathé in France. Before that he had spent three years with a French government research lab in sub-nuclear physics. In 1980 he became assistant to the manager of the Kodak Pathé Photofinishing Lab, and the following year was appointed manager of the lab. Following an internship program in training in marketing and management methods in 1984, he became business manager of Business Information Systems and Corporate Accounts in France. In 1987 he was named business manager of the Photofinishing Systems Division, where he was responsible for marketing of photographic papers, chemicals and equipment to industrial labs in France. He subsequently was named assistant to the general manager of Kodak Pathé, and in 1989 was appointed general manager and vice president of the Europe, Africa and Middle East Region for Motion Picture and Television Imaging. He assumed his current position in December of 1992.

M. Petit is a native of Baden-Baden, Germany and holds a master's degree in engineering from L'Ecole Superieure de Physique et Chimie de Paris, and a post-graduate degree in nuclear physics and corpuscular electronics from the University of Paris X.

* * *

For the fourth year in a row, the ASC welcomed to the Clubhouse the winners of the Annual Student Academy Award competition. Stanley Cortez, Victor Kemper, Woody Omens, Steven Poster, Owen Roizman, and Vilmos Zsigmond gave short lectures and participated in group discussions during the afternoon reception. The visit was part of a week of industry-related activities and social events put on for the students, who hail from the University of Utah at Salt Lake City, Philadelphia's University of the Arts, California Institute of the Arts, Brown University, Wesleyan University, New York University, Art Center College of Design, Columbia University, and Munich's Hochschule fur Fernsehen und Film.

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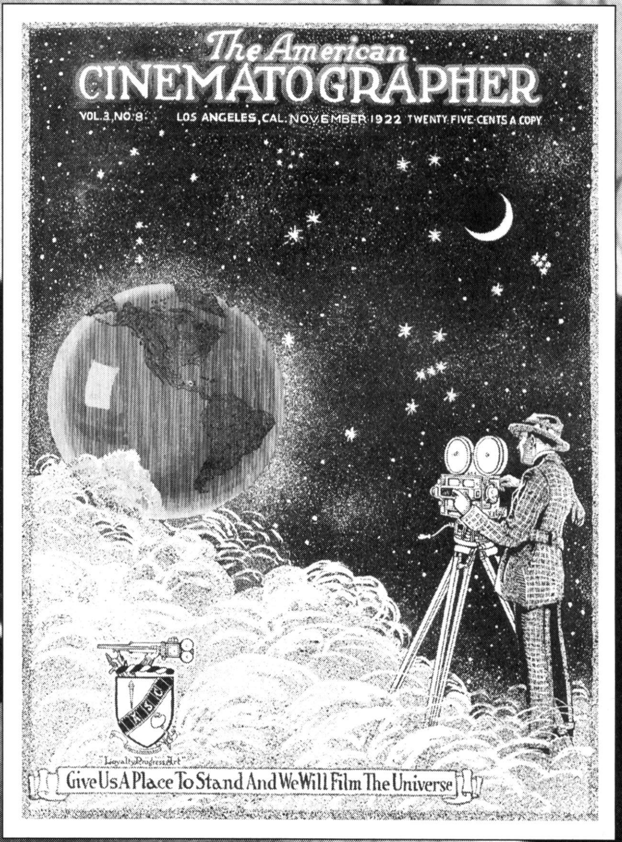
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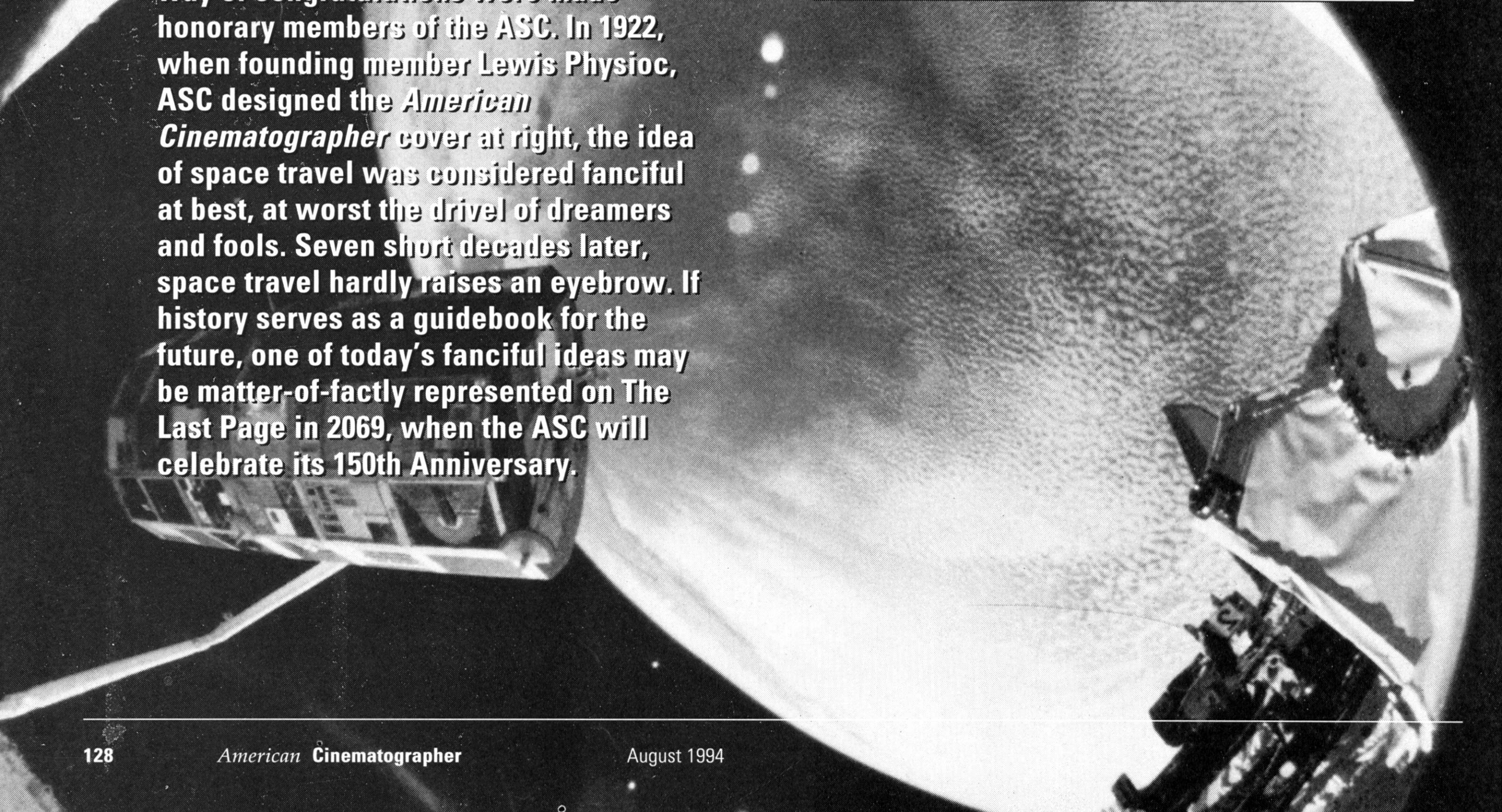

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